THE

REVENUE REGISTER.

No. 8.] MADRAS:—TUESDAY, AUGUST 15, 1876. [Vol. X.

REPORT ON THE DISEASED LEAVES OF COFFEE AND OTHER PLANTS.

We have received a copy of the abovementioned Report written, apparently on information supplied to him from India, by M. C. Cooke, Esq., of the India Museum, London. We cannot but admire its printing and general get-up. The frontispiece is adorned by a coloured plate representing the leaf diseases of the coffee, the mango, and the jack. The appearances patent to the naked eye, and those revealed by the microscope are beautifully pourtrayed. From the Report itself we learn that the leaf rot or *kole-roga* is by no means identical with the leaf disease; that though both these pests are of a fungoid nature, yet the leaf *disease* is an *endophyte*, developed *in* the tissues of the leaf itself, while the *rot* is an *epiphyte* growing *on* the leaf and only superficially connected with it. This distinction was, we are told, pointed out by Mr. Graham Anderson in the following words:—"The difference between the leaf disease and the rot is that the former is a fungoid disease originating in, or at least affecting, the cellular tissue, and causing a fungoid efflorescence or eruption on the leaf, whereas the rot is a fungoid deposit from without assisted by the impaired condition of the system of the plant. Leaf disease, under the microscope, is found to consist of innumerable minute fungi, which are forced out of the pores of the leaf, whereas the tenacious fungoid web, which in *rot* completely creeps over the under surface of the leaves, is evidently a mildew deposit caused by atmospheric action, coupled with a passive submission of the leaf to the insidious attack, owing to the vital energy of the plant being impaired." We are told that the leaves affected by the rot are spotted on the under surface with "large greyish white irregular patches"; that these patches are smooth; that they appear superficial and can be removed with the point of a lancet. One very striking peculiarity of this fungoid growth is that the spores are so intimately attached to the web-like mass of thread of which its substance is composed, that they cannot be detached without great difficulty, whereas mucedine spores in general are detached by the mere application of moisture. So intimate is the adhesion of the spores to the threads in the rot fungus that though portions of leaf were immersed in water, glycerine, and in spirit to facilitate microscopic examination, the mucus was not thereby dissolved, nor were the spores set free. The specimens treated with *liquor potassæ* were rather more distinct, and those treated with nitric acid

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were clear at first, though they soon passed into a cloudy indistinct mass (probably from the destructive action of the acid). As to the nature of the fungus we learn that :—"From the examination of this rot, with a view to the determination of its scientific relationship, the conclusion appears to be that it has no very close affinities, that it is not only specifically new, but will have to be accepted as the type of a new genus. It, doubtless, must be grouped with the *mucedines*, or white moulds, but the presence of the gelatinous element is a novelty. The creeping threads, and echinulate spores might at first suggest *zygodesmus* but, apart from the gelatinous element, there is no constriction or cutting of the threads as in that genus, and the spores are sessile. The habit has also some resemblance to such species of *Oidium* as are recognised as the *conidia* of certain species of *Erysiphe*, but there the resemblance ends, for the fructification is very different. No alternative presents itself but to accept this fungus as the type of a new genus under the name of *Pellicularia Kali-roga*. The disease appears to be very analogous to, if not identical with, a black rot that attacks the Betel nutpalm. We must confess that we could not at first sight see how a fungus adhering merely to the surface of the leaves and not affecting their parenchyma could be so destructive; but it will be readily understood from the following explanation by Mr. Cooke :—"The fact of an epiphytal fungus, which does not penetrate the tissues of the leaf, being so destructive to the foster plant, may at first seem strange, until it is remembered that in plants with coriaceous leaves, all, or nearly all the stomata are confined to the under surface of the leaf. If, therefore, a filmy substance like the present fungus over-spreads the under surface of the leaf, and securely seals up all the stomata, it is but reasonable to expect, not only that the leaves should fall, but that the plants should suffer injury. In such diseases as that which affects the hop (*Sphærotheca Castagnei*) the chief destructive action lies in the closing up of the orifices of the leaf by the woolly coating of mycelium produced by this fungus. It might be worth the experiment to ascertain if a coating of gelatin washed over the under surface of the leaves of a coffee-tree, so as to act artificially in the same manner as the rot, would produce similar results. Such an experiment could be performed on a coffee estate much more satisfactorily than upon a plant subject to artificial conditions as cultivated in this country."

Mr. Cooke next considers the means of getting rid of the disease. Of course, as he says, there must be simultaneous action by all the planters, or the plague will be suppressed only partially and for a time to break out again afterwards. He suggests that the application of sulphur from a hand dredging machine somewhat after the manner in which hops are treated at home, might be found efficacious.

With regard to the coffee leaf disease of Southern India it would appear to be identical with the coffee leaf disease as noticed in Ceylon, *Hemileia vastatrix*. It appears in roundish, irregular spots on the under surface of the leaves. It is an endophyte and having traversed the tissues of the leaves, the fruitful thread breaks through the cuticle in small tufts. At the tips of these threads are the spores. We are told that this disease principally affects a coarse variety of the coffee tree called locally "Chick trees." Acting upon this belief, great care is taken to guard against the introduction of "Chick trees" into plantations. From the returns furnished to him by the planters, Mr. Cooke found that trees attacked by the leaf disease do, as a rule, recover; that trees once attacked are liable to returns of the disease; and that the

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attacks increase in severity. As to the causes of the disease they would appear to be those of mal-nutrition generally, such as faulty drainage, stagnant water, &c. Possibly also much mischief is done by the mycelium, or spawn of fungi contained in the soil around the roots. In the specimen of soil sent home with the diseased leaves for examination, Mr. Cooke detected a large quantity of mycelioid filaments such as are always to be found in decaying vegetable matter.

As to remedial measures Mr. Cooke does not think that the leaf disease, being an endophyte, is likely to be benefited by sulphur. One planter, as soon as the disease appeared, had all the affected leaves picked off and burnt. This measure succeeded perfectly, and he was rewarded by a fine crop. This remedy would however be impracticable on large estates. Another remedy suggested, namely, washing the leaves with a weak solution of carbolic acid, though excellent in principle, would be equally difficult of application.

Two specimens of "Mango leaves affected by a peculiar blight" were forwarded to Mr. Cooke for examination. One specimen was found not to be diseased at all but to have its under surface invested by a scurvy white, woolly fungus in which were imbedded minute dead insects. In this case the insect and not the fungus was the deleterious element. In the other case a black fungus was found belonging to a group, one species of which is very injurious to Orange trees, and other species of which attack the hazel, poplar, willow, maple and other trees.

Several other specimens consisting of the leaves of the Girgutty, or Sand paper tree, the Guava tree, the Charcoal tree, and the Jack tree were forwarded to Mr. Cooke for examination; of these only the leaves of the Jack tree appeared to be infected with fungoid disease, while even in them it appeared to be a mild affection not related to the fungi which produce the coffee leaf disease, the coffee rot, corn mildew, the hop or potatoe disease, &c.

To quote Mr. Cooke's words, the conclusions to which he came are "that the coffee rot is equally or more injurious to the coffee estates than the so-called coffee leaf disease; that it is a species of parasitic fungus not before known to science; that it is of such a nature as is likely to yield to treatment by sulphur in a similar manner to that employed in the hop gardens of this country;* that the coffee leaf disease is also prevalent, but the planters are divided in opinion as to its injurious influence on the quantity or quality of the crop; that it is advisable to experiment on diseased coffee trees with Condy's fluid in the manner in which it has been successfully employed in the Hollyhock disease. And, finally, it is submitted that further specimens, in earlier or later stages, of the coffee rot should be sent to this office† together with that which attacks the betel nutpalm, in order that its history and development, and specially the mode of dispersion of the spores may be fully investigated." To these conclusions succeed a series of extracts illustrative of the mode of sulphuring diseased plants which appears to have been very successful in cases of the hop disease at home.

Elsewhere in our columns will be found a paper on the leaf disease in Ceylon, taken from the *Ceylon Observer*, and another well thought out and apparently very practical in its bearing from the *Madras Mail*. Our own humble opinion is that though sulphur fumigation and borax washing may be excellent remedies in theory, yet they are too troublesome to admit of general applica-

* England. † India Museum, London.

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tion, and that the surest as well as simplest form of relief, is prevention rather than cure—that is to say, that careful manuring, good weeding and a generally high degree of cultivation will do more to prevent plants from contracting the disease than sulphur, Condy's fluid, or borax will ever cure.

ADMINISTRATION OF TRAVANCORE.

Most of our readers will be interested in the successful administration of a Native Kingdom which has often been justly alluded to as a model State, especially when, setting aside the fact that it is presided over by a most enlightened Prince, it is remembered that it is actually governed by a distinguished official of the Madras Service who, having won a first class reputation as an efficient executive, recently filled the high position of native colleague of the honorable the members of the Board of Revenue of Madras. We have before us the very modestly written Report of the Administration of Travancore for the year 1874-75 by A. Séshiah Shastri, Dewan or Prime Minister of that Kingdom; and from it we learn that the model State has had the blessing of abundant harvests and the enjoyment of unabated prosperity. In the simple language of the esteemed Dewan—"The rains fell as they were required both for the rice crop, the cocoanut gardens and the few dry grains which are grown in the State. The harvest was consequently plentiful, and the gardens productive." Territorially small as may be the Kingdom of Travancore, as compared with the huge districts under the British rule by which it is overshadowed, it has a land revenue of eighteen and a half lacs of rupees a year: nearly twelve lacs of this are from its rice fields, and the remainder from its gardens. Of recent years Coffee cultivation has been introduced on the Travancore hills: the enterprize has thriven; and at the present time not less than forty-eight thousand acres are devoted to the rearing of a shrub which, originally confined to a race of Arabs, has now become a familiar household word in every European country. In the last year 7,817 acres of Coffee land were put up for sale at Travancore, and fetched the unprecedentedly high price of Rupees 2,14,761 at an average of 28 Rupees per acre, the highest price realized however having been so much as 82 Rupees an acre. There is no export duty on Coffee in Travancore, but His Highness' Government has it in contemplation to raise the assessment on the Coffee lands to 2 or even 3 Rupees per acre. The next principal source of Revenue is Customs; and from this source we find that the Travancore Government nets nearly thirteen lacs of rupees, exclusive of the Rupees 40,000 which the British Government pays it as compensation for abolished import duties. The export duties realized Rupees 3,60,457, and the import duties fetched Rupees 9,25,936. The product which principally contributed to the customs was *copra*, or the dried cocoanut, the export duty on which amounted to more than a lac and a quarter rupees. Coir brought in more than a half a lac; and the rest was made up in duty on cocoanuts, cocoanut-oil and fibre. There were also export duties levied on Pepper and *Vettoopauk* or areca nut, which amounted to Rupees 26,224 on the one and Rupees 22,400 on the other. The leading commodity which yielded its import tribute to the Travancore Customs was Tobacco, to an extent exceeding nine lacs of rupees. Transactions in opium we find were very small, and the import of piece goods, rice, &c., was not worth mentoining. Salt realized a revenue of more than ten lacs; Abkarry fetched a lac and a half; the Forest Department contributed

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near 78,000 Rupees; and Cardamoms and forest produce yielded a lac and a half. Besides all this, there was a miscellaneous quota of revenue amounting to Rupees 6,23,434 which, was got out of Pagoda offerings, Post office collections, Registration fees, Fines, &c. The total revenue collected was altogether about one hundred lacs of rupees which, deducting expenditure, left about ten lacs to be carried to the credit of the State.

Having looked at "the sinews of war," let us now turn our attention to the more elevating indications of an enlightened Government. The administration of justice must of course rank first. Justice is dispensed by about 21 District Munsiffs, 12 Zillah Judges (with appellate powers), and a Sudr Court consisting of four Judges, the chief of whom is T. Chellappa Pillay, B.A. and B.L. of the Madras University, the second Judge being Mr. Ormsby, LL.D., Barrister-at-law. The money value of the litigation dealt with in the year is set down at Rupees 35,20,291; the number of suits disposed of being 30,240 or 83 per cent of the file. This Judicial establishment we are informed costs Rupees 1,66,213, while the judicial receipts are given at Rupees 1,40,704. Beside the native magistracy, we find that four European Special Magistrates were recently appointed for the purpose of dealing with European British subjects. These four gentlemen are Mr. H. Crawford for Alleppey, Dr. Ormsby and Mr. Bensley for Trevandrum, and Mr. R. Baker for the Peermade range. This arrangement was the result of a negociation with the Government of India, who yielded to the wishes of the Maharajah that he should appoint these gentlemen as Magistrates with the first class powers prescribed by our Criminal Procedure Code, and that they were then to be commissioned as Justices of the Peace by the Viceroy, by virtue of which they possess the power of committing European British subjects either to the British Resident at Travancore as a Court of Session, or to the High Court of Madras, dealing however with ordinary cases magisterially. This concession, as it naturally would be, is viewed with eminent satisfaction by our courtly neighbour of Travancore. We do not think it necessary to notice in detail the statistics of crime in the State. Crime occurs every where; and even the model State enjoys no immunity from the curse of fallen nature. We may simply mention that of committed cases there were 124 offences against the person, and 260 against property. The former included 20 murders, and the latter 48 cases of robbery and 193 of theft. This may be considered remarkably small in an entire State. On the other hand, cases of death seem to have been remarkably large; for we are told that there were 93 cases of suicide, and 276 deaths by accident. 56 people hung themselves, 31 drowned themselves, 2 persons killed themselves by poison, and 4 got rid of themselves by other means. 144 persons were accidentally drowned, 98 were killed by falling from trees; and 34 met with death in various other ways. The Public Works Department appears to be most effectively administered, about seven lacs of rupees being spent in the State on Irrigation works, roads and bridges, buildings, &c. The efforts made in the advancement of education are not behindhand. There is a High School and College at Trevandrum, which numbers 952 pupils in all, 98 of whom are in the Collegiate Department, and 585 in the High School. The success of education in Travancore may be tested by the fact that in the year under notice 29 students matriculated, 17 passed the First in Arts Examination, and 6 took the B. A. degree in the University of Madras. There are District Schools besides, which are under the superintendence of Mr. Oliver H. Bensley, B. A.; and these and

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the Vernacular Schools are all said to be in a very favorable condition. The Travancore Government spends Rupees 90,696 in the Medical Department. At the capital itself there is a Civil Hospital with 960 in and 9,678 out patients, a Charity Hospital with 739 in and 4,752 out patients, a Palace Hospital with 110 in and 1,607 out patients, a Jail Dispensary with 2,065 out-patients, a Jail Hospital with 549 in-patients, and a Lunatic Asylum with 89 inmates. Travancore also possesses a Lying-in Hospital in which 42 in-patients and 48 out-patients were treated during the course of the year. The Report states that 72,289 persons were vaccinated, which shows a decrease of 11,303 as compared with the previous year. As a purely Hindoo Sovereignty, it is not to be wondered at that religious and charitable institutions present a marked feature in the administration of the country. Rupees 5,73,626 were expended in the year on Pagodas and *Devasans*; and *Ootperas* or Charitable feeding Institutions cost the State Rupees 3,06,584. Travancore has also its Museum which was visited by about 90,000 persons during the year; and among the additions to its contents are noticed some interesting specimens of marble inlaid stonework in imitation of the Taj at Agra brought by the Maharajah himself from Delhi and other places in Upper India, specimens of marine products collected about Cape Comorin by His Highness the First Prince, and a specimen of the wonderful *Euplectella*, or fossil sponge presented to His Highness the Maharajah by Dr. Hyde, of Bloxham, England. We find that the Observatory, which was presided over by Mr. Taylor and afterwards by Mr. Caldecot, is still kept up at Trevandrum; and that bi-filar and uni-filar observations, as well as observations of the transit of Venus, were taken and despatched to Mr. Brown, in addition to the ordinary meteorological observations conducted at the Observatory.

The most noticeable feature of the report is an interesting diary of His Highness the Maharajah's journey to Calcutta on a personal visit to the Viceroy. In the course of this journey, His Highness visited Madras, Poonah, Indore, Patna, Allahabad, Benares, Agra and Delhi, besides Calcutta itself, where His Highness was right royally received in Durbar by the Queen's Representative with the highest honors accorded to an independent Prince. We would fain copy the Dewan's description of the visit to the Taj: "The colored lights with which the long marble walls and terraces were lit produced a very pleasing effect. The interior of the tomb was lit with Roman candles and presented a beautiful sight. Thousands of little lights were then sent down the stream of the Jumna: the movement of these on the water, as they neared and receded from each other, as they drew together and parted, produced a very pretty effect. The American tourist's description of the Taj as 'Poetry in marble' was no exaggeration." With this, and the following extract we conclude our notice of Seshia Shastri's Report of the Administration of Tranvancore. "His Highness arrived at the old landing place, *Calpalacadavoo*, Trivandrum, and proceeded in procession to the palace, amidst the cheers and congratulations of his expectant subjects, after an absence of 46 days, during which a journey of 6,313 miles was accomplished, under God's blessing, without a single accident or casualty, and during which, thanks to the British Government, nothing but uniform kindness and courtesy were experienced everywhere."

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Messrs. SOMASUNDRUM AND PARTHASARADY CHETTY'S COMPILATION OF PENAL LAWS (MADRAS.)*

This is a compilation, which will, we think, prove a useful supplement to the Penal Code. It consists of a collection of the Penal Sections in all the Local or Special Acts in most frequent use in the Madras Presidency. The arrangement is alphabetical—the easiest and best, in our opinion, for ready reference,—the Acts (*i.e.*, such sections of them as prescribe punishments for the respective offences thereunder) being printed in the alphabetical order of the titles of the Acts. At the end of the collection of Penal Sections of Acts, comes a Schedule, exactly similar in form to that in the Penal Code, the offences under their respective sections of those Acts, with the punishment attaching to each, the Court by which triable, and their quality as to being summons, or warrant cases, and whether bailable or not, being set out in tabulated form. The order in the Schedule corresponds with the order in the previous portion of the book. The book is in fact constructed on the model of the Penal Code. As the latter is a Code of General Penal Laws, the former is a Code of Local and Special Penal enactments, not indeed of all, but of the most used and useful among them. The compilation now under notice is one that will be of great assistance to Magistrates, to practitioners in Criminal Courts, and to members (of all grades) of the Police Department. It commends itself, perhaps, most especially to the last-mentioned class, from its being a book of an easily portable size; in fact we might characterize it as a *hand-book* or *manual* of Local and Special Penal Laws.

* *A Code of the principal Local and Special Penal Laws in force in the Madras Presidency.* By S. Somasundrum Chetty and S. Parthasarady Chetty—Madras, 1876. Printed by C. Foster and Co.

We have to congratulate the authors upon a work not only happily conceived, but carefully and efficiently executed. The price is Rupees 6.

CORRESPONDENCE.

To the Editor of the Revenue Register.

Sir,

I shall feel very thankful if you will kindly explain the meaning of the expression "Gross Rental" used in Clause 7, Class III, Schedule B, of the Mofussil Municipal Act III of 1871, and also in Clause 3, Class III, Schedule C, of the Madras Municipal Act IX of 1867.

By so doing you will no doubt confer a great boon on the Tax-payers of Mofussil Municipalities.

I remain, Sir,

Yours very faithfully,

Tax Payer.

There can be no other meaning intended of the term *Gross Rental* than its obvious meaning, viz., the full amount of rent the Shop or Place of Business in question fetches, or is estimated to fetch, without being subject to any deductions whatever on any account.—Ed. *R. R.*

HIGH COURT—MADRAS.

Morgan, C. J., and Innes, J.

Suit to enforce acceptance of puttah—Indefinite demand or notice not sufficient to sustain such suit.

A sued for a decree to force B to accept a puttah of him but failed to show that he had tendered a puttah to B, or that such tender had been dispensed with.

Held, *that to maintain a suit to enforce the acceptance of a puttah, the landholder must show that he had tendered such puttah and that the tenant had refused to accept it—a mere indefinite demand or notice was not sufficient.*

S. A. 665 *of* 1875.

Syed Chandamiah Saib *v.* Lakshmana Iyengar.

This was a Special Appeal against the decree of Mr. H. W. Bliss, Acting District Judge of Madura, in Appeal Suit No. 436 of 1874 against the decision of the Acting Deputy Collector of Madura in Summary Suit No. 40 of 1873.

The facts of the case sufficiently appear in the Judgment of the Acting District Judge of Madura, which is as follows:—

"The suit was by a landlord to compel ac-

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ceptance of puttah and grant of muchilika in exchange by three ryots joint puttahdars.

The Deputy Collector dismissed the suit on the ground that the puttah sought to be imposed had not been tendered in writing as required by Section 7 of Act VIII of 1865.

The plaintiff appealed to this Court in Appeal Suit No. 362 of 1873, and Mr. Hutchins, the then District Judge, reversed the decree appealed against, and remanded the suit for disposal on the merits on the following grounds.

'Section 7 has no bearing on a suit of this description. It relates only to proceedings taken to enforce the terms of tenancy. The appropriate section is Section 9, and all that is necessary is that there should have been a demand uncomplied with for one month. The demand and the writing for one month are alleged in the plaint and again in the oral pleadings. The Act does not require the demand to be in writing.'

The Deputy Collector thereupon held a fresh investigation, and finding that a verbal tender of puttah had been made, passed a decree in favour of the plaintiff, which is now appealed against.

It is with considerable diffidence that I venture to disagree with Mr. Hutchins and to hold that the tender of a puttah in writing is a necessary preliminary to a suit by a landholder under Section 9 of Act VIII of 1865 to enforce acceptance of a puttah, and that, therefore, the original judgment of the Lower Court was right, and that now appealed against is wrong.

My reasons are as follows:—

In the first place, I think that it is unreasonable to expect a ryot to accept a puttah unless tender is made to him in writing, because it is impossible for him to ascertain on a mere verbal demand whether the puttah is such as the landholder is "entitled to impose." It is also impossible for him to prepare his muchilika, to be given in exchange for the puttah, unless he has the terms of the puttah reduced to writing and before him for reference.

In the second place, it appears to me that Section 7 makes a tender in the way there laid down (that is in writing) imperative. It enacts that no suit brought to enforce the terms of a tenancy shall be sustainable unless puttahs and muchilikas have been exchanged, or unless a puttah has been tendered in at least so effective a way as the delivery of a copy, or unless (which is not the case here) both parties have agreed to dispense with puttahs and muchilikas. Mr. Hutchins held that a suit under Section 9 was not a suit to enforce the terms of a tenancy. But the first of all the conditions of a tendency falling under Act VIII of 1865 is that puttah and muchilika shall be exchanged, unless the parties agree to dispense with them. I think, therefore, that a suit under Section 9 is a suit to enforce one at least of the terms of a tenancy, and that perhaps the most important, and at all events the only one positively insisted upon by the law (*vide* Section 3).

Another argument for holding that before a landholder can bring a suit to enforce acceptance of puttah he must tender a puttah in writing, is, I think, to be drawn from the law as it stood before Act VIII of 1865 was enacted. That Act is professedly a consolidation Act. The sections of the old regulations which correspond to Sections 9 and 10 thereof, are Sections 8 of Regulation V of 1822 and 10 of Regulation XXX of 1802. By the first of these sections (in order of time) it was provided that in case of a ryot's persisting for a month in his refusal to exchange puttah and muchilika, the landholder might summarily eject him; by the latter, that he should apply to the Collector for an enquiry as to the justness of the puttah offered and for order for ejectment, &c. But the latter provision did not repeal the former. It merely modified it. Until Act VIII of 1865 was passed, therefore, it was the law (under Section 10 of Regulation XXX of 1802) that the landholders should offer the *puttah itself* in the presence of witnesses before he could bring a suit to compel its acceptance. So he may do, if he pleases, still, and the tender would in my judgment be a perfectly valid one, although a concession has been made to him by Act VIII of 1865, and he is now not compelled to offer the *puttah itself*, but may serve a copy of it on the tenant in certain ways prescribed. But the essential provision that the tender must be in writing remains, I think, unaltered.

My decision, therefore, is that the decision of the Lower Court appealed against must be reversed, and its original decree restored, and the plaintiff's suit dismissed with all costs.

In coming to this conclusion I have not overlooked the fact that the plaintiff's witnesses stated before the Lower Court that the puttah itself was offered; but as they flatly contradicted one another as to the presence of the first and second appellants on the occasion, I prefer to disbelieve them, and hold with the Lower Court that a verbal tender only was made."

The High Court delivered the following

Judgment:—25th February 1875.

When this suit was remanded by the Lower Appellate Court nothing more was decided by the Court than that the provisions of Section 7 had been misapplied to the suit which is a suit brought under Section 9 to enforce acceptance of a puttah, not a suit under Section 7 to enforce the terms of a tenancy.

We agree with the Lower Appellate Court in the Judgment now before us in appeal, though

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we do not assent to all the reasons assigned for that judgment.

The order of dismissal first made by the Deputy Collector was right, because the plaintiff who sued to enforce acceptance of a puttah failed to show the tender of a puttah, or that such tender had been dispensed with.

Where the parties are bound to exchange written engagements in the forms of puttah and muchilika, the landholder must, in order to maintain a suit to enforce acceptance of the puttah, show that he on his part has done what the law requires from him. A mere indefinite demand or notice, whether written or unwritten, is not sufficient to sustain such a suit. A puttah should be tendered for the tenant's acceptance and upon his refusal to accept the landholder's right to sue to enforce acceptance arises.

The appeal is dismissed with costs.

HIGH COURT—CALCUTTA.

[*Appellate Civil.*]

JACKSON AND McDONELL, JJ.

Putni Tenure, Sale of, for Arrears of Rent—Regulation VIII of 1819, *Section* 8, *Clause* 2, *and Section* 14—*Date of Publication of Notice.*

The fact that the receipt of the notice of sale was dated the 15*th of Bysack, and therefore did not show that the notice had been published at some time "previous to that day," so as to satisfy the provisions of Section* 8, *Clause* 2 *of Regulation VIII of* 1819, *was held not to be sufficient ground for setting aside the sale of a putni tenure for arrears of rent.* There being nothing in the receipt to show the date on which the notice was published, no injury to the plaintiff having been proved, and it appearing that more than the time prescribed by the Regulation had elapsed before the sale actually took place, the Court refused to set aside the sale.*

It would not be a "sufficient plea" within the meaning of Section 14 *that the receipt had been obtained, or the notification published, on, instead of previous to, the* 15*th of Bysack.*

Matungee Churn Mitter *v.* Moorrary Mohun Ghose and others.*

SUIT by the holder of a 12-anna share of a putni tenure, to set aside a sale of the tenure for default in payment of rent, upon the ground, amongst others, that the notification of sale was not published before the 15th Bysack as required by Clause 2, Section 8 of Regulation VIII of 1819. The defendants were the Zemindars and the purchasers at the sale. The receipt for the service of the notification bore date the 15th Bysack, and was signed by four munduls of the village, in which the plaintiff's mal cutchery was situated. The serving peons deposed that they had served the notification of sale on the holder of the 4-anna share on the 13th or 14th of Bysack, and that they went to the plaintiff's house on the same day, but found neither the plaintiff nor his servants there; that, on the following day, they went to the plaintiff's mal cutchery, but were unable to find either the plaintiff or his gomasta or any other servant, and that they thereupon sent for the munduls of the village, read the notice to them and affixed it to the cutchery, and obtained from them the receipt dated 15th Bysack. The sale took place on the 3rd Joisto, seventeen days after this.

The Subordinate Judge was of opinion that there was a sufficient publication of the notice, and dismissed the suit. The present appeal was then preferred by the plaintiff.

Baboo *Chunder Madhub Ghose*, for the appellant, contended that it was essential to the validity of a sale under Regulation VIII of 1819, that the provisions of the Regulation should be strictly complied with. The Collector must be satisfied that the notice was published before the 15th Bysack, whereas in the present case the receipt produced by the defendants clearly proved that it was not so published.

Baboos *Mohini Mohun Roy* and *Rash Behary Ghose*, for the respondents, contended that the object of the Regulation was to give the defaulter sufficient notice of the intended sale, and the law considered fifteen days to be sufficient: see *Haranath Gupta* v. *Jagannath Roy Chowdhry*.† Here the plaintiff had had at least seventeen days' notice, and it was not pretended that he had been in any way damnified.

Baboo *Chunder Madhub Ghose* in reply.

* As to how far a strict compliance with the provisions of Section 8, Clause 2 of Reg. VIII of 1819 is necessary, see *Baikanthanath Sing* v. *Maharajah Dhiraj Mahtab Chand Bahadur*, 9 B. L. R., 87, and cases there cited, and *Ramsabuck Bose* v. *Kaminee Koomaree Dossee*, 14 B. L. R., 394.

* Regular Appeal, No. 240 of 1874, against a decree of the Subordinate Judge of Zillah Hooghly, dated the 4th July 1874.

† 9 B. L. R., 89 note.

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The judgment of the Court was delivered by

JACKSON, J.—In this case, the suit was brought for the purpose of setting aside the sale of 12-anna share of a putni tenure held by the defaulter. A great number of objections, some of a frivolous kind, and some of an unjustifiable kind, have been brought forward in appeal, but the only one which deserves notice or which was seriously pressed is that where it is contended that the notice in this case does not appear to have been published before the 15th Bysack, the sale having taken place on the 3rd Joisto following. Now, it is to be observed that the Legislature, in passing Regulation VIII of 1819, for just and equitable purposes, prescribed a variety of forms required to be gone through by Zemindars, on applying for the sale of a putni tenure for arrears accrued due thereon, some part of the procedure being carried out by officers of the Collector's establishment: and one of the matters prescribed by Section 8, Clause 2, is that the Collector should be satisfied of the service of the notice, either by the receipt of the defaulter, or of his manager; or, if that cannot be procured, then by the signature of three substantial persons residing in the neighbourhood. Then it says:—"If it shall appear from the tenor of the receipt or attestation in question, that the notice has been published at any time previous to the 15th of the month of Bysack, it shall be a sufficient warrant for the sale to proceed upon the day appointed." That and other rules having been so laid down, Section 14 of the same Regulation says:—"It shall be competent to any party desirous of contesting the right of the Zemindar to make the sale, whether on the ground of there having been no balance due, or any other ground, to sue the Zemindar for the reversal of the same, and upon establishing a sufficient plea to obtain a decree with full costs and damages." The meaning of that provision, as it appears to me, is, that, if the defaulter or the alleged defaulter should be able to make out that the Zemindar was not in a condition to obtain the sale of his under-tenure, that there had been no balance due, or that the procedure enjoined by the Regulation had been neglected, so that the defaulter has been prejudiced by reason of that neglect, then the Civil Court is declared entitled to set aside the sale and to grant a decree to the plaintiff with full costs and damages. But it certainly would be no "sufficient plea" or substantial cause of complaint that the receipt in question had been obtained, or that the notification had been published on, instead of previous to the 15th of the month of Bysack. The law says that if it shall appear, that is, appear to the Collector, that the notice has been published at any time previous to the 15th of the month of Bysack, that shall be a sufficient warrant for the sale to proceed. Now, in the receipt which has been read to us in this case, the particular time of publication is not stated. The receipt is dated the 15th, and has the signatures of three substantial persons, which is to be accepted only in case of inability to procure the receipt of the defaulter. It might very well be that the previous day or days had been spent in vain efforts to procure the signatures of the putnidar or his agent, and that the receipt was afterwards completed by the signatures of the mundals, obtained on the 15th of Bysack, and this might well have satisfied the Collector that the notice had been in fact published previous to the 15th. That being so, and no injury to the plaintiff being at all made out, it appears to me that the ground set up is wholly insufficient to induce this Court to set aside the sale. It may be added as it appears in this particular case that the sale, instead of taking place on the 1st of Joisto, did not take place until the 3rd, and therefore even if we assume that the publication had taken place on the 15th, still the defaulter had two days more than is prescribed by the Regulation.

The appeal is dismissed with costs.—*The Indian Law Reports*, Vol. I, Part V, p. 175.

HIGH COURT—BOMBAY.

[*Appellate Civil Jurisdiction.*]

WEST AND NANABHAI HARIDAS, JJ.

Miras—Razinama—Extinction of Miras right.

B, a Mirasdar, addressed a razinama to the Mamlatdar, resigning certain miras lands in favour of L (to whom at the same time he delivered possession of the lands), and containing no reservation or qualification:

HELD, *that the transfer to L was complete and the rights of B wholly extinguished.*

S. A. 441 *of* 1874.

Tarachand Pirchand *v.* Lakshman Bhavani.

THIS was a special appeal from the decision of C. B. Izon, Joint Judge of Tanna at Nasik, in Appeal No. 68 of 1874, reversing the decree of the Subordinate Judge of Sinnar in Original Suit 775 of 1872.

The facts, which, for the purpose of this report, may be taken as proved, are as follows:—

One Haibati was the *Mirasdar* of a piece of land. After his death his son Bhagu, in August 1867, passed a *razinama* to the Mamlatdar in

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favour of the defendant Lakshman in the following terms:—

"To Shamrav Govind, Mamlatdar, on behalf of the Government, Taluka Sinnar.

[This *razinama* is passed] by Bhaguji valad Haibat Halvar, Patil of Mouje Muldhon. My representation is as follows:—

The land [situated] in the aforesaid *mouje* is in the name of my father Haibati valad Bhaguji Halvar, Patil. But the person named above is dead. I am his eldest son and heir. I am too poor to cultivate [the same]. Therefore I resign the land. The number of that *tike* (field) [is as follows]:—

Name of the Tike.	[Survey No.]	Acres.	[Assessment] Rupees.
1 Tike Govind Khila.	64	20	3 12 0

The above land has been resigned from the Christian year 1867-68. Therefore, the Government should take away the [said] land from my name and transfer it to that of Lakshman valad Bhavanji Pavle, Patil of the village mentioned above. I and the [other] person mentioned above agreed between ourselves and have made this *mobadla* (transfer). This *razinama* for a *mobadla* (transfer) is duly given in writing. The 26th day of the month of August in the Christian year 1867." At the same time Bhagu gave the defendant Lakshman possession of the lands comprised in the *razinama*.

Haibati's right in the land was sold in December 1869 at an auction sale at which one Tarachand was the purchaser. Tarachand then brought the present suit against Lakshman for recovery of the land with mesne profits. Lakshman contended that the *razinama* was a complete abandonment of all the rights of Haibati in the land, and that, consequently, he was himself the absolute owner of the land.

There was no evidence, nor was it contended in argument in either Court, that Haibati had been guilty of any fraudulent concealment of the fact of his being a *Mirasdar*, or that Lakshman was ignorant of that fact; the contrary inference might, however, fairly be drawn from the fact that Lakshman was himself Patil of the village in which were situated the lands comprised in the *razinama*. There was no evidence of the consideration paid by Lakshman for the transfer, and the point that there was none, was raised for the first time at the argument of the special appeal, but, as a fact, none had been paid.

The Subordinate Judge passed a decree in favour of the plaintiff; but the Joint Judge reversed his decision and decreed for the defendant.

The special appeal was heard by West and Nanabhai Haridas, JJ.

Gokaldas Kahandas for *Dhirajlal Mathuradas*, Government Pleader, for special appellant:—The *razinama* No. 16 does not contain the words "No claim whatever of mine remains in the land," and is not, therefore, a complete relinquishment of the *miras*. The *Mirasdar* consequently can resume possession of his land within 12 years. What Lakshman acquired by the *razinama* was merely a tenancy-at-will, determinable at the *Mirasdar's* pleasure within the period of limitation. There was no consideration for the *razinama*.

Ghanasham Nilkanth:—The *razinama* does not contain the words "No claim whatever of mine remains in the land;" but is nevertheless a complete abandonment of the grantor's rights. There is not a word of limitation, or of reservation. Section 42 of the Survey Act I of 1865 (Bombay) makes the new occupant responsible for the assessment. The exemption of the grantor from the liability to pay assessment and the undertaking of the grantee to pay it, constituted the consideration for the *razinama*.

West, J:—Haibati's son Bhagu, it is clear, passed to the Mamlatdar a *razinama* of the land in dispute in favour of the defendant Lakshman. Tarachand, as subsequent purchaser of Haibati's rights, now seeks to eject Lakshman, asserting that, as the land is *miras*, the resignation by Bhagu conferred no more than a precarious right of occupation terminable at the will of Haibati or of the successor to Haibati's interest. It is plain, however, that Bhagu gave up possession of the land in dispute to Lakshman. Lakshman's possession is *primâ facie* evidence of complete ownership, throwing the burden, according to Section 110 of the Indian Evidence Act, of showing that it is held on some inferior title, upon him who seeks to dislodge the possessor. Under the English Common Law "if the defendant pleads livery and seizin from the plaintiff, the plaintiff cannot reply that the livery was conditional without showing the deed, inasmuch as the plaintiff is estopped to defeat his own livery by a naked averment and parol evidence only:" 1 Gilb. on evidence, 86. The creation of a greater interest than a lease of three years, except by a writing, was afterwards prevented by the Statute of Frauds, and hence it comes that the formal delivery of possession does not now in England raise the natural presumption which formerly attended it; but the Statute of Frauds is not in operation amongst Hindoos at Nasik, and he who delivers possession there, without evidence of anything more, places himself in such a position that the ordinary presumption

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operates against him. Under the Hindoo law there must, to constitute a complete title, and therefore a complete transfer of title, be *juris te seisinæ conjunctio* according to Sir T. Strange; but under that law, too, a title may be inferred from possession, so that he who hands over possession gives room for this inference to arise.* The nature of the possession granted, or rather of the right in virtue of which the physical detention of the property is transferred, is to be sought in the accompanying agreement, or rather expression of will, on the part of the grantor. Here he hands over possession and gives in a *razinama* in favour of Lakshman, not limited by any qualification whatever. It is argued that the *Mirasdar's* right to resume possession may have been reserved; but to this, if to any case, the maxim applies *expressanocent non expressa non nocent*. If Bhagu intended to reserve any portion of his right, he should have said so. In *Church* v. *Brown*,† Lord Eldon said: "The safest rule for property is that a person shall be taken to grant the interest in an estate, which he proposes to convey or the lease he proposes to make; and that nothing which flows out of that interest, as an incident, is to be done away by loose expression, to be construed by facts more loose; that it is upon the party, who has forborne to insert a covenant for his own benefit, to show his title to it." If, being a *Mirasdar* with rights as such, Bhagu, concealing this circumstance, induced Lakshman to take up the land and relieve him from the burden of the assessment, he was bound to make good the apparent title which he conferred on Lakshman, and so was any one else who came in, like the plaintiff here, by a title created subsequently to the transfer to Lakshman. The transfer to Lakshman, therefore, seems to have been complete, and the rights of Bhagu wholly extinguished. For these reasons we confirm the decree of the Joint Judge with costs.

Note.—In *Suryabhau* v. *Bukajee* (2 Morr. S. D. A., 189) the late Sudr Divani Adalat held that when a *Mirasdar* abandoned his land, and the Collector made it over to an *Ooprec*, such *Ooprec* did not, by thirty years' possession, acquire a title against the *Mirasdar* under Regulation V of 1827, Section 1.—See also *Apa* v. *Jaghoo* (1 Morr. Sel. Dec. 51). But these cases were overruled in *Salu* v. *Ravji* (1 Bom. H. C. Rep. 41) in which it was held that the Regulation applied. See also *Arjuna* v. *Bhavan* (4 Bom. H. C. Rep. A. C. 133) in which it was held that limitation under Act XIV of 1859 ran against a *Mirasdar* abandoning possession of his land.

In *Joti* v. *Balu* (reported *infra*) a rule directly opposite to that enunciated in the present case was laid down, viz., that a *Mirasdar* who has given in a *razinama* has a right to recover his land if he sues within the period of limitation, unless in that document it is expressly stipulated that he has abandoned his *miras* rights.—*Idem*, p. 91.

* 1 Str. H. L. 31., 2 *Id.* 20., 1 Coleb. Dig. 131 CXIII.
† 15 Ves. 258, *see* p. 268.

HIGH COURT—ALLAHABAD.

[*Before a Full Bench.*]

STUART, C. J., PEARSON, TURNER, SPANKIE, AND OLDFIELD, JJ.

Lambardar—Co-sharer—Profits—Revenue—Set-off.

HELD, (Spankie, J., dissenting), *that a lambardar, who had paid an arrear of Government revenue out of the collections of subsequent years without reference to the co-sharers, was entitled, in a suit against him by a co-sharer for his share of the profits for such subsequent years, to claim in the suit a deduction on account of such payment.*

Udai Singh *v.* Jagan Nath.*

THIS was an appeal to the Full Bench, under Clause 10 of the Letters Patent, against a judgment of Pearson, J., from which Spankie, J., dissented.

The facts of the case which are material appear in the judgments of the learned Judges.

PEARSON, J.—The first plea in appeal appears to be valid. The defendant is the lambardar of the mahal of which the plaintiff is a co-sharer. The jama of the mahal was fixed by Mr. Lowe at Rupees 1,488-12-0. Mr. Currie reduced it to Rupees 1,275 from 1272 fusly. In 1278 fusly the Government disallowed the reduction, and directed the difference to be recovered for the previous six years. The amount was made good by the defendant in 1281 fusly, and it cannot be denied that he would be entitled, if he had paid it out of his own pocket, to recover from the plaintiff a sum proportionate to his share in the mahal. In the present suit the plaintiff claims Rupees 384-14-0 as arrears of profits due to him for 1278, 1279, and 1280 fusly. The defendant answers that he has paid the amount claimed to the Government in payment of the demand above-mentioned, and that it is less than what is due from the plaintiff on that account. The Lower Courts have held this defence to be insufficient. They think that he was not justified in applying in 1281 fusly profits which were due to plaintiff before that time, and without first calling on the plaintiff to pay his share of the Government demand; and that the proper course to be taken was to have brought a suit against the plaintiff for his share of the Government demand, in the event of his refusing to pay it on demand.

The opinion of the Lower Courts is not well-founded in reason or equity. When the defend-

* Appeal under Clause 10 of the Letters Patent, No. 7 of 1875.

ant was required to pay to the Government an amount for which the plaintiff was jointly responsible, the former had in his hands a balance remaining out of the collections of 1278, 1279, and 1280—a balance which, after payment of the Government revenue and village expenses, would have been divisible as profits among the co-sharers of the mahal. But it was no breach of trust or breach of duty on his part to use that balance in paying the demand of Government for the arrears of revenue on account of the six years previous to 1278. There was nothing illegitimate in the course adopted by him; and it seems unreasonable to insist that he should have paid to his co-sharers the profits which would doubtless otherwise have been due to them, and that he should have paid the demand of the Government out of his own pocket, and sued them for contribution. For the moneys claimed he has accounted most satisfactorily, and it may well be presumed that they were reserved during the years to which the suit refers for the purpose to which they have been applied.

The answer made to the suit being good and sufficient, the suit should have been dismissed. The appeal is therefore decreed by reversal of the Lower Courts' decrees, with costs in all the Courts.

SPANKIE, J.—I am sorry that I cannot accept the proposed judgment of my honourable colleague.

The judgments of the Lower Courts appear to me to be correct on the point regarding which I differ from Mr. Justice Pearson. In the present case the order for payment of the enhanced jama had been made in 1278 fusly,* but it had not been complied with by the appellant, the lambardar, until February and March 1874; and in case No. 368, which is a similar one to case No. 369 now before me, the lambardar had not made his second payment until May 1874—that is to say, not until after the institution of the suit. It is found in both cases that the defendant, appellant, had never called upon the plaintiffs to make good their quota of the enhanced jama from 1272 to 1278 fusly.† Nor had he himself, as far as appears from the record, ever paid their portion or any portion of the sum claimed by Government for those six years from his own pocket—the first payment made by him in this case being on the 27th October 1873, *i.e.*, Katik, 1281 fusly.

Now the plaintiff, respondent, claims profits on account of the years 1278, 1279, and 1280 fusly from the defendant, the lambardar, *i.e.*, whatever is due to him after payment of the Government revenue and village expenses. There is no dispute that his quota of the Government revenue on Mr. Currie's jama has been paid for those years, and what he claims is the profits of the three years, after deducting the Government revenue and village expenses. The accounts for each year should be closed and audited annually, and any sum remaining after the satisfaction of the Government jama and village expenses should be made over to the shareholders, and until distributed may be regarded as being in the hands of the lambardar in trust for the shareholders. He is not at liberty to appropriate them for any other particular purpose without authority from the shareholders. In these years 1278, 1279, and 1280 fusly the defendant, as lambardar, had not himself made any extra payment to Government. If he desired to make his co-sharers responsible for their quota of arrears of Government revenue which he had to pay, or expected that he might have to pay, he might have sued them for the amount under the Rent Act, or he should have taken such other steps, as the Civil Court or Revenue laws permitted him to take, for the recovery of the money, after he had been compelled to pay in 1281 fusly the difference between the jama of 1272 and that of 1278 fusly as settled by the Government. But he was not, in my judgment, at liberty to claim, in answer to this suit, from the plaintiff his share of the profits of 1278, 1279, and 1280 fusly, as a set-off (for it amounts to that), being his quota of the sum actually paid by the defendant on account of the revenue demanded by Government, and levied from him in 1281 fusly.

The Act under which the suit has been brought does not allow a set-off to be pleaded in any claim of this nature. The money which the plaintiff claims in this suit as due to him was withheld by the defendant, appellant, before he had been compelled to make any payment, on account of the enhanced Government demand; and I do not think that the share for which the plaintiff may be responsible can be deducted in this suit from the amount of profits due to him on account of the three years for which he has instituted his claim. (The learned Judge then proceeded to determine the remaining pleas in appeal, but so much of the judgment, for the purposes of this report, is immaterial.)

The *Senior Government Pleader* (Lala *Juala Parshad*) for appellant—The lambardar can only deduct from the profits of a year the legitimate village expenses of that year. He is a trustee and agent for the co-sharers, and cannot dispose of the profits of a co-sharer accrued due to him without his consent. The respondent should bring a separate suit.

Pandit *Ajudhia Nath* (with him Babu *Oprokash Chandar*)—Multiplicity of suits is to be avoided. The respondent had the money in his hands, and paid it in satisfaction of the Government demand, which he was entitled to do. He should be allowed the payment.

STUART, C. J., and PEARSON, TURNER, and

* Sept. 1870—Sept. 1871.

† Sept. 1864—Sept. 1871.

Oldefield, JJ., concurred in the following opinion :—

It appears that Mr. Currie as Collector allowed a reduction of the yearly revenue, subject, it may be presumed, to the sanction of Government. In 1278 fusly sanction was refused, and a demand was made on the respondent, the lambardar, who however did not pay the arrear due until 1281 fusly. Meanwhile he retained in his hands the profits of 1278 fusly, 1279 fusly, and 1280 fusly, and not improbably for the purpose of meeting the Government demand if pressed. In the suit out of which this appeal arises, the appellants, the pattidars, sue the lambardar for their profits of the years 1278, 1279, and 1280; and he pleads that, out of the sums collected in these years and remaining in his hands, he has paid the arrears of revenue above-mentioned; and the question which principally calls for decision in this appeal is whether he is or is not entitled to be allowed this payment. We are of opinion that he is. The lambardar is, in this village, the agent of the co-sharers to make collections, and after payment of the revenue to divide the profits. An arrear of revenue was due to Government, and to discharge this arrear he was entitled to have recourse to the collections for the years 1878 fulsy, 1279 fusly, and 1280 fusly, remaining in his hands undivided. There is nothing in the revenue law which restricts a lambardar or other co-sharer, who may make collections, to discharge arrears of Government revenue out of the collections of the particular year in which the arrear may accrue. It would be at least inconvenient to hold that, having in his hands profits to meet the Government demand, the respondent, instead of applying these profits to the discharge of the demand, should be driven to have resort to a suit against each co-sharer.

Spankie, J.—I adhere to the opinion expressed in my judgment of the 8th June 1875. Nothing that I have heard leads me to think that my view is incorrect.—*Idem*, p. 135.

CIRCULAR ORDERS OF THE BOARD OF REVENUE.

No. IX.

Standing Nos. 274-5, 276-2, and 277-1.

Service of Processes under Act II of 1874.

Proceedings of the Board of Revenue, dated 6th June 1876, *No.* 1484.

Batta Peons may be employed for the service of processes under Act II of 1864 (Madras) whenever it is found necessary to do so, but care must be taken to prevent abuse, and especially to guard against the entertainment as batta peons of needy Cutcherry retainers.

Board's Proceedings, dated 24th April 1874, No. 971.

2. The number of peons required for each taluk should be determined by Divisional Officers, who should inspect them before they are enrolled. A register should be kept of them; they should be told off for duty in turn as their names appear on the register, and their remuneration should not be allowed to exceed Rupees 7 a month. The number for each taluk should be so fixed, that their cost may be recovered by the amount collected during the year, and it should be altered from time to time under the orders of the Divisional Officers according to requirements. The process servers may be transferred from one taluk to another as experience may dictate.

3. Village Officers should always be made to assist the batta peons in serving processes, and no property should be distrained by the latter except in the presence of the head of the village.

4. The maximum rates* of batta are those prescribed in Board's Standing Circular No. 274, paragraph 20. When it is found that more batta than is required is collected, the rates should be immediately reduced.

	AS.
* For service of any process within a distance of five miles ...	1
Beyond five and within twenty miles ...	3
Beyond twenty miles ...	4

5. Fees for the service of processes under Act II of 1864 should be credited to "I. Land Revenue," minor head "Miscellaneous," and disbursements should be made under the corresponding head.

6. Standing Circulars Nos. 276 and 277 are cancelled.

(A true Extract.)
(Signed) C. A. GALTON,
Acting Secretary.

No. X.

Standing No. 387-1.

Collectors and Divisional Officers.

Proceedings of the Board of Revenue, dated 19th June 1876, *No.* 1591.

The special attention of all Collectors is drawn to the following recent order of Government.

2. They will understand that they are not at liberty to leave their Districts without the sanction of the Board previously obtained, and will impress upon their Divisional Officers the necessity for a strict observance of the rule.

(A true Extract.)
(Signed) C. A. GALTON,
Acting Secretary.

Proceedings of the Madras Government, under date 10th June 1876, No. 781, Revenue Department :—

It having been brought to the notice of

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Government that the Collector of was recently absent from his District at a neighbouring station in the adjoining District and that he proceeded thither without the previous sanction of the Board of Revenue, His Grace the Governor in Council must express his dissatisfaction at departure from well-known rules, and directs the Board of Revenue to call the attention of all Collectors and their Divisional subordinates to the necessity of obtaining their previous sanction on written application, or, on emergency, on application by Telegram in any case where circumstances may render it necessary for them to seek to leave their District.

(True Extract.)

(Signed) D. F. CARMICHAEL,
Secretary to Government.

No. XI.

STANDING No. 150-13.

LAND SOLD WITH SPECIAL SANCTION OF BOARD.

Proceedings of the Board of Revenue, dated 26th June 1876, *No.* 1635.

WHEN land is sold with the special sanction of the Board otherwise than under the rules for the sale of unassessed waste lands, a provision should be inserted in the conditions of sale similar to Clause 3, Section 36, Act II of 1864 (Madras), requiring the deposit by the purchaser at the time of purchase of a sum equal to 15 per cent of the price, the deposit being declared liable to forfeiture should the remainder of the purchase-money not be paid within thirty days from the date of sale.

(A true Extract.)
(Signed) C. A. GALTON,
Acting Secretary.

No. XII.

STANDING No. 271-1.

KIST.

Proceedings of the Board of Revenue, dated 20th June 1876, *No.* 1653.

THE following table of revised rates of kist should be substituted for the one appended to Standing Order No. 271.

DISTRICTS.	PROPORTION OF ANNUAL TAX PAYABLE EACH MONTH.							
	November.	December.	January.	February.	March.	April.	May.	Total.
								ANNAS.
Ganjam	...	4	4	4	4	...	...	16
Vizagapatam	...	4	4	4	4	...	...	16
Godavery	...	4	4	4	4	...	...	16
Kistna	...	4	4	4	4	...	...	16
Nellore	...	2	2	2	4	4	2	16
Cuddapah	...	4	4	4	4	...	...	16
Kurnool	2	4	4	4	2	...	...	16
Chingleput	...	2	2	4	4	2	2	16
Bellary	...	2	2	4	4	2	2	16
North Arcot	2	2	4	4	2	2	...	16
South Arcot ...	2	2	2	4	4	2	...	16
Tanjore	2	2	2	3	3	4	...	16
Trichinopoly ...	...	4	4	4	4	...	...	16
Madura	...	2	2	2	2	4	4	16
Coimbatore ...	2	2	4	4	2	2	...	16
Nilgiris	2	2	4	4	2	2	...	16
Tinnevelly	2	2	4	4	2	2	...	16
Salem	2	2	4	4	2	2	...	16
South Canara ...	...	...	4	4	4	2	2	16
Malabar	2	2	4	4	2	2	...	16

(A true Extract.)

(Signed) C. A. GALTON,
Acting Secretary.

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No. XIII.

STANDING No. 295-7.

SUITS.

Proceedings of the Board of Revenue, dated 14th July 1876, *No.* 1802.

THE following alterations should be made in Circular No. 13 of 1875:—

In Clause 2 omit the words "and the full amount of costs is awarded."

For Clause 3 substitute the following:—

When the costs actually incurred are in excess of the amount awarded, the difference may be adjusted without reference to the Board.

(A true Extract.)

(Signed) C. A. GALTON,

Acting Secretary.

OFFICIAL PAPERS.

CATTLE DISEASE IN THE MADRAS PRESIDENCY DURING TEN MONTHS, ENDING 31ST JANUARY 1876.

Proceedings of the Madras Government, Revenue Department, 15*th June* 1876.

Read the following Proceedings of the Board of Revenue, dated 9th May 1876, No. 1210:—

Read the following letter from Veterinary Surgeon G. WESTERN, Governor's Body Guard, to C. A. GALTON, ESQ., Acting Secretary to the Board of Revenue, dated Madras, 1st March 1876, No. 142.

WITH reference to Proceedings of the Board, Miscellaneous No. 774, of 26th January 1876, I have the honor to state that, in accordance with the order of Government therein referred to, I reported myself to the Officer Commanding His Grace the Governor's Body Guard for Military duty with that Corps on 23rd December 1874. I have the honor to forward herewith, for the information of the Board, a report on cattle disease in the Presidency during my tenure of the office of Inspector. I regret that this has been so long delayed, press of other duty having prevented my completing it earlier. Reports still reach me from various districts, and these I have hitherto answered when necessary. I request I may be informed how they are to be disposed of in future.

ENCLOSURE No. 1.

Report on Cattle Disease in the Madras Presidency from 16*th March* 1875 *to* 31*st January* 1876, *by Veterinary Surgeon* G. WESTERN.

Gazetted Inspector of Cattle Disease on 16th March 1875, I proceeded to Madras with as little delay as possible, and reported my arrival to the Secretary to the Revenue Board on the 23rd March 1875.

2. I was informed that the fact of my appointment would be intimated to all Collectors, who would be requested to communicate with me direct when requiring my services on account of cattle disease in their districts.

3. At the same time, I was put in possession of all available papers on the subject. From these and other sources I learned that since the departure of Mr. Thacker in 1873, no officer had been in charge of the department, and that all reports on the subject had been discontinued. I therefore at once requested that a report in the form originally adopted by the Bengal Cattle Plague Commission, and also used by Mr. Thacker, should be sent me as early as possible after the outbreak of disease in any district.

4. I also learnt that Collectors were empowered to procure medicine, for distribution to the ryots, from the Rev. Dr. Scudder of the Raneepett Dispensary, and on inquiry I ascertained that medicine of one kind only, made from a prescription of Mr. Thacker's, was used in all cases alike, and, as may be supposed, with very varied success, and that in some instances it had even been said to have proved injurious.

5. I accordingly suggested that I should have handed over to me the remaining supply of this medicine, and that future applications from Collectors should be made to me direct.

6. Having for years been aware of the very great success attending Mr. Thacker's treatment of Rinderpest with this medicine, and having myself had opportunities of proving its efficacy, and as, in addition to this recommendation, it has also the advantage of being composed of inexpensive drugs easily procured in most native bazaars, I determined as far as possible to continue its use, modified of course as circumstances required, hoping also to find it had already the confidence of the native cattle-owners.

7. To prevent further mistakes, I have attached to each tin printed labels with fuller instructions for use than had hitherto been given.

8. Numerous opportunities have occurred for its trial, and I have distributed large quantities, but its success in the hands of the natives has not, I regret to state, by any means justified my expectations, and, in spite of my precautions, I still find it is frequently used for the treatment of disease in cases for which it is altogether inapplicable.

9. The reasons of this failure I have learned to be, that its use is too often, through distrust on the part of the natives, restricted to cases in

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which the disease has progressed so far that treatment of any sort would be hopeless. A dose or two is tried on some moribund animal, and because an immediate favorable result does not ensue, they become more than ever prejudiced against its use, and report that the "English medicine is useless;" or the directions for its use are not adhered to—it is given in insufficient doses and not sufficiently persevered with, or it is given in the first stage of the disease instead of only after purging has commenced. Proper care is not taken of the patients, but by neglect of cleanliness, maggots are allowed to breed about the mouth, nostrils, and posteriors, and the animals die in consequence of nervous exhaustion, induced by the extreme irritation of the system thus caused.

10. In my own hands, in the few cases I have been able to treat, the result has been universally successful, and I am convinced that a better medicine could not be prescribed, but it will easily be understood that it is impossible to prescribe any single medicine for the treatment of a disease like Rinderpest, which has so many different forms, each necessitating a different course of treatment.

11. That in question is intended for the particular type of the malady most common in this Presidency, in which the most prominent symptoms are diarrhœa and dysentery, and it is equally applicable where these occur from ordinary causes, as in Rinderpest, when they are but symptoms of a peculiar fever.

12. A Manual of Cattle Disease compiled by Mr. Thacker has also been translated into Tamil, Telugu, Canarese, and Malayalam, and printed and distributed by the order of Government. This is an admirable little pamphlet, most reliable in its descriptions of disease, and thoroughly scientific as regards the methods of treatment recommended.

13. In the vernacular copies, extracts from a publication of the Bengal Government "On the more deadly forms of cattle disease in India" in particular, a chapter "On the contagious diseases and the modes of preventing them" have been incorporated. This is a most valuable addition, and, in my opinion, the rules laid down cannot be too widely promulgated; were they acted up to by village authorities and cattle-owners, disease would be almost unknown in the country.

14. These vernacular manuals appear to be in the hands of all Tahsildars and in most villages, but I have found that they are in very few cases referred to or acted upon; and in most instances are professedly not understood. I have on every possible occasion pointed out the value of the information to be there obtained, and am convinced that it is only because through prejudice unsought, and through apathy, that the treatment is untried and that its value is not more thoroughly appreciated.

15. The past few months have been unhealthy in the extreme for man and beast. Excessive heat, with failure of rain and other meteorological conditions less understood, have brought about outbreaks of disease in various parts of the Presidency.

16. No provision is made by native cattle-owners by storing forage for seasons of drought, and the consequent alternations of almost starvation with superabundance of rank forage their animals are subjected to, is an ever recurring cause of disease.

17. Contagion has however, I think, been the main cause of the spread of cattle disease during the past season, and, under existing circumstances, cannot fail to continue to extend its ravages.

18. Very vigorous measures are necessary to cope with such highly contagious maladies as Rinderpest and Epizootic Aphtha, better known as Foot and Mouth disease, and the natives are too apathetic and too prejudiced by superstition, if left to their own devices, to adopt them.

19. The Collector of the district perhaps publishes warnings or instructions in the local gazette, but has no means of knowing if they are attended to, and I have met with instances where reports were made that such and such precautions had been adopted in obedience to such instructions, when on subsequently visiting the locality I have found that nothing of the sort had been attempted.

20. Reports have in the majority of instances reached me long after an outbreak of disease had done its worst and was dying out or had passed out to adjacent villages. The impossibility of obtaining early information of disease, or of fixing its précise locality, has been one of the greatest difficulties I have had to contend with. This and the fact that I have never been able to have the advantage of a Collector's presence with me, and that natives would not produce their sick animals to be treated by me, has compelled me in great measure to confine myself to inquiry into the nature of the disease in each locality I have visited, and to advise the Collector of the best method of treatment, medical or preventive.

21. Had I continued in office I had hoped to have overcome both these difficulties, which have caused me much disappointment and regret; for I believe that much more may be done by actually demonstrating to the natives how good a result follows the adoption of judicious preventive measures, combined with careful treatment, than by distributing medicine which is mostly improperly used and usually to

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the exclusion of anything like precautions to prevent contagion, and therefore I think too often doing a great deal of harm.

22. As a result of my investigation, I find that, although very many different names are given to disease in different districts, in reality three maladies only prevail to any extent at present, *viz.*, Rinderpest, Anthrax, and Foot and Mouth disease, and that the two former only are the causes of the mortality among cattle in the Madras Presidency.

23. Some idea of this mortality may be derived from the number of deaths that have been reported to me from 1st April 1874 to 31st January 1875 of animals attacked with these diseases, *viz.*, of 32,947 animals suffering from Rinderpest, no less than 19,285 are reported to have died; and of 1,976 attacked with Anthrax, 1,467 died. The reports sent me are in many respects imperfect, and the figures are, I fear, not very reliable; but I have as far as possible reduced them to a tabular form. Formidable though they appear, I fear the amounts recorded cannot be considered to represent the full extent to which disease has prevailed.

24. The Rinderpest or Cattle Plague of Europe, I have met with under the local names "Saraku," "Vokkai," "Dommai Musara," "Vaisury," and "Doda Roga," &c. It has prevailed in North and South Arcot, Bellary, Mysore, South Canara, Chingleput, Godavery, Kistna, Kurnool, Malabar, Nellore, Salem, and Trichinopoly Districts, and I believe still exists in every one of these localities; a smouldering fire ready to break out again with redoubled virulence so soon as circumstances favor its extension.

25. The disease has already been fully described by my predecessor in many reports, and most accurately in the manual before referred to. I have had many opportunities of verifying this description, but have met with no unusual features in its appearance.

26. I have availed myself of every possible opportunity of making *post-mortem* examinations, and, though finding in every instance characteristic signs of this particular malady, have seen no variations that merit record.

27. Its outbreak in a village is almost invariably traced by the natives themselves to contagion through cattle mixing on their grazing grounds with those of adjacent villages, or with those belonging to travellers among which the disease already exists, and in my opinion, this is in reality almost invariably, if not solely, the method of propagation.

28. There can be no doubt that there is an incubative stage of the disease, *i.e.*, a latent period between the time of contact with a diseased animal and the manifestation of the malady by observable symptoms of ill-health, and that during this time it may by contagion be communicated through a thus apparently healthy animal mixing with others of a herd. The system of segregation advised in the manual under the heading "Rinderpest" and also in the chapter on the "Contagious diseases and their prevention" is calculated to meet this danger, and if properly carried out, is most efficacious in the repression of contagious disease in localities where it has already shown itself.

29. I have found however that natives will not carry it out in its integrity, mostly contenting themselves with the obviously inadequate measure of separating the sick from the healthy, and that often only by keeping one shed of the village, probably in close proximity with those used for the healthy, to be occupied by them. Any excuse, such as rain, wind, too much sun or cold is taken advantage of as a reason why the healthy should not be turned out, whereas the risk the animals would really be exposed to on such account is infinitesimally small in comparison with that they run through chance of contagion.

30. The system of housing the cattle in the villages is most favorable to the spread of any infectious malady, more particularly when, as is too frequently the practice, the sick and healthy are kept together in their usual stalls.

31. Notwithstanding their knowledge of the contagious nature of this disease, natives in the most reckless manner drive the sick so long as they can walk to pasture with the rest of the herd, and too often the poor suffering brutes are left to die where they fall, as frequently as not as much through sheer starvation as from the effects of the disease.

32. In many cases I have been told it is useless to trouble about them, or to give any medicine, because if their time has come they must die, or if not, they will recover of themselves. In other villages they have stated that they are afraid to anger the deity who is supposed to have inflicted the disease, lest a greater calamity be brought upon themselves.

33. In some few instances, native remedies of an appropriate nature have been used with success, but, in the majority of cases, the remedies employed have been useless. In one report it is said that oil was poured on the head and in the ears of the animals, and that this prevented their being attacked with the disease.

34. The best course of medical treatment of Rinderpest has been proved to be, firstly, the administration of a mild aperient in the early stage when constipation of the bowels is mostly present. This I have found to be the case in most instances of the disease as seen by me,

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and the effect of the aperient has been frequently found by me to cut short the disease. Excessive purgation must be avoided, and it is therefore better to give small doses and to repeat them at intervals till the desired effect is produced. Castor or linseed oil, sulphur and salt, are the drugs most suitable and most easily procured.

35. Mr. Thacker appears to have adopted this mode of treatment in this stage of the disease, but has omitted to notice it in the manual. Future editions should be corrected as this is important.

36. In the second stage of the disease, the treatment should be to keep the purging in check but not to stop it entirely. This is easily effected by the judicious use of astringent drugs combined with advantage with a narcotic to relieve the pain; catechu, chalk, galls, opium or datura being the most useful agents for the purpose.

37. The strength of the animal needs support in consequence of the rapidly debilitating effect of the disease, and the inability of the animals, through soreness of the mouth, to feed themselves. They should therefore be drenched two or three times a day with congee, which may be made from any grain the animals are accustomed to, but of rice or wheat flour in preference. A stimulant such as arrack added will be found decidedly beneficial, and the congee will be the best medium for the administration of the necessary medicines.

38. Febrifuges such as nitre, camphor, and chiretta with salammoniac are useful in all stages of the disease.

39. Good nursing and the most scrupulous attention to cleanliness are important to prevent the breeding of maggots about the eyes, mouths, and posteriors of the sick.

40. The cost of treatment in comparison to the value of the animals has frequently been urged to me as a reason for its neglect, and at first sight with some apparent reason, but I believe that when judiciously adopted in the majority of instances it will be found that the increased number of recoveries will much more than compensate for the outlay.

41. To be of benefit treatment must be begun early and perseveringly continued throughout the various stages of the disease in spite of the most discouraging symptoms. The disease as a rule certainly in this country assumes a milder type than is usually met with in Europe, but a large proportion of fatal cases must be expected whatever system of treatment be adopted.

42. I am decidedly of opinion that the medical treatment of animals suffering from contagious diseases, without the simultaneous adoption of precautionary measures to prevent their spread, is wrong in principle and calculated to do harm by increasing the risk of contagion, through prolonging the lives of the diseased and by the necessary handling of them and probably of the healthy also by their attention.

43. The system of segregation has already been stated by me to be the most efficacious of repressive measures. This and other necessary precautions are fully detailed in the Manual of Cattle Disease, and consequently do not need further notice from me.

44. I have found that the very necessary precaution of disinfecting and burying the excreta of the sick is not sufficiently attended to, and also that the carcasses of animals dying of disease are invariably given to the chucklers, who by taking the flesh to the vicinity of the cattle in the village may thereby communicate the disease.

45. The hides are also always preserved, and have doubtless frequently been the cause of outbreaks from village to village. It has been found necessary in foreign Europe to entirely prohibit the hide trade during epizootics of this sort for the same reason. The safest plan is of course to destroy and bury the hides with the carcasses, but where it is considered advisable to save them, it may be safely done if they are at once tanned, or, where this is impracticable, dried by exposure to sun and air for at least three weeks in a place where neither men nor animals can come in contact with them.

46. Natives are so little to be depended on in matters of this sort, that I have hitherto thought it necessary to recommend the destruction of the skins of all animals dying from contagious disease.

47. Eating the flesh is known in Europe to have caused disease in man, but I have heard of no cases where it has proved hurtful in India. Probably the thorough cooking it undergoes in the process of curry-making renders it innocuous.

48. It has been asserted that the outbreak of Rinderpest is contemporaneous in any country with that of cholera; I have no means of judging whether Rinderpest has been *unusually* prevalent during the past year, but its simultaneous existence with the late prevalence of cholera is worthy of note.

49. In 1866 "Act No. II of 1866" entitled "An Act for the prevention of the spread of cattle disease in the Madras Presidency" was passed by the Governor of Fort St. George in Council. This it has never apparently been thought expedient to put in force as yet, but it will, I think, be found that without some such

special legislation, nothing really effective can ever be done in the way of preventing the spread of Rinderpest.

50. During the past season, I first heard of the existence of this disease in a letter from the Collector of South Canara, dated 9th April 1875, from whose description I was able to recognize the disease, and replied accordingly, advising a trial of the course of treatment laid down in the Manual, but, in particular, directing attention to the necessity of preventive measures, such as segregation, &c. It was not considered advisable that I should then visit the locality on account of the difficulty of getting about during the early part of the monsoon, successive reports have been sent me from various parts of this district. The treatment recommended does not find favor with the natives, and the system of segregation has never, I think, been thoroughly carried out, and the disease, which for a time appeared to have abated, has spread from village to village, and still exists in the district. The contagion is almost invariably recognized by the natives as having come from animals brought down the ghauts, but preventive measures are confined to separating the sick, and although medicine has been sent, and is reported to have been tried, it has had little or no effect on the rate of mortality.

51. Early in May I by chance heard of the existence of cattle disease in the Chingleput District, and on inquiry, being informed by the Assistant Collector that he had had personal experience of its existence in the Trivellore Taluk, I determined to visit that locality. After some days' inquiry there, I found it still prevailed in the village of Nagalapuram.

52. My inquiries on arrival there soon convinced me that Rinderpest was indeed the cause of the mortality, but it was some time before I succeeded in getting the natives to produce a sick animal for my inspection. The owner consenting reluctantly to my treating it, though at first sight it was a very unfavorable case, being already far advanced in the dysenteric stage of the malady, it fortunately soon showed signs of amendment, and as a consequence, one or two others were brought me to treat, until eventually I got together nine, among which were a very emaciated buffalo and a small calf whose mother had died of the disease some days before; these two were hopeless cases, and died, the buffalo the same, the calf the next day. The remainder I had the satisfaction of leaving convalescent when summoned to Cuddapah five days after on account of a more serious outbreak in that district.

53. Nothing I could do or say, however, would induce the villagers to try the removal of the healthy from the village, nor indeed to separate the sick, except those treated by me, and which were picketted near my tent in a tope which I had chosen with a view to get them thus isolated, (and even these were taken back to the village before I left the ground), but in the most reckless manner the herds were pastured in the fields around these, and often spite of my orders animals were permitted to stray into my camp and come in contact with the sick.

54. I received a subsequent request from this village for more medicine, and shortly after information that no more animals had died, and that the disease had ceased, but from other villages in the vicinity, I have since had reports of similar disease evidently spread there by contact with diseased cattle, and from one it is reported that all the animals attacked died in spite of the medicine sent by me having been administered, but the symptoms described are evidence that the animals were neglected, and died from exhaustion and irritation caused by starvation and the breeding of maggots.

55. In the Cuddapah District, near Raichoty in two hamlets, I saw several cases of this disease, but evidently of a milder type. I was informed that medicine had already been received from the Collector, but had been used in vain. I saw two carcasses lying outside one of these hamlets unburied, and, on pointing out the risk of leaving them thus exposed, was told that through some village superstition they were afraid to bury them for fear of the anger of their deities. An examination of these carcasses confirmed my diagnosis of the nature of the disease. A supply of medicine was left here, and was used "with some good effect" I learn.

56. At Muddenpilly the disease had greatly abated on my arrival there on the 28th May, but I succeeded in seeing one or two cases. These animals I could not induce the owners to remove from the village, but they allowed me to give them medicine, and with apparent good result.

57. As the Acting Collector was present at this place, I purposed remaining there, hoping his influence would get me patients, and that he might succeed in getting some sort of segregation adopted, but on the 30th May I received orders to proceed at once to Bellary, Rinderpest having attacked the Commissariat cattle there. I was therefore compelled to content myself with leaving a supply of medicine with instructions as to the best measures to be adopted.

58. "Somewhat favorable" results have been since reported from this district as to the effect of the medicine, and it is also invariably stated that "segregation has been attended to," but the loss of cattle has been great, and the disease still exists in the Pulivendla Taluk.

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59. I was in communication with the Collector and about to start to meet him in this part, when removed to other duty in December.

60. The outbreak among the Commissariat cattle at Bellary has already been separately reported on by me. The disease was undoubtedly brought into the cantonment by some of the cattle engaged in taking invalids to Ramandroog coming in contact with diseased animals at Courtenay and other villages on the road, where the disease had been raging, but of which no report had been made. The history of this outbreak, which but for the energetic measures adopted by the officer in charge of the animals might have proved a serious one, shows the necessity that officers in charge of Government cattle should, as far as possible, be kept informed by the civil authorities of the existence of cattle disease in villages in the vicinity of military cantonments.

61. While engaged on this duty in Bellary, I also made inquiries as to the existence of disease in the district, but, although it was reported that some time previously murrain had prevailed, from information then available, it appeared to have nearly died out, and it was considered unnecessary for me to remain there on that account after the 18th June, and I accordingly returned to Madras.

62. During June application was made to me by the Collector of South Canara for medicine. This was supplied and attention once more directed to the preventive measures necessary for Rinderpest in the Udipy Taluk.

63. I also received a report from the Collector of Trichinopoly of diarrhœa which had prevailed in the Museri Taluk in the month of April, but which had however apparently ceased. This I considered another outbreak of Rinderpest, and wrote and advised accordingly.

64. It was reported also to have been in the Coimbatore District, but had ceased before the information reached me.

65. In the Salem District it appeared by the farm reports sent me to be still in existence, and although in every report it was stated that segregation had been attended to, and Dr. Thacker's medicine had been given, no good result appeared to have followed, and I resolved to see for myself how matters here stood. I accordingly left Madras for Oossoor on 4th July and visited all the villages, *viz.*, Morasur, Killamungalum, Odenapilly, Tuppaganapilly, Bettiganipilly, and Koorawarapilly, in which I could hear of any sickness.

66. No attempt had any where been made even to remove the sick from the herd. My offers to treat them or to give medicine were invariably declined, and a high wind which then prevailed was given as a reason why segregation could not be tried; several opportunities were found for making *post-mortems*, but the disease appeared to be dying out, so, in consultation with the Assistant Collector, it was determined that he should endeavour to induce the ryots to give a further trial to the medicine and also advise some precautionary measures, and that I should revisit the locality later in the season if necessary, and I returned to Madras on the 16th July.

67. When again at leisure early in December I was informed that disease had there entirely ceased.

68. Reports now reached me of some mortality in the Bellary District, but too late for a visit, and the proper measures appeared from the reports to have been adopted.

69. From Tanjore also I received reports of Rinderpest, Anthrax, and Foot and Mouth Disease, and, in reply to my letter advising the necessary precautions, I was informed that a visit was not required.

70. Diarrhœa was also reported to have prevailed in the Kurnool District in the Ramulkota Taluk, and, though it had apparently ceased, the disease being evidently the Rinderpest, I wrote to advise precautions and the necessary treatment in anticipation of its re-appearance in the neighbourhood. It did extend to several villages, and segregation is said to have been tried, as also the medical treatment advised, and, though some mortality occurred, the disease has, I believe, now disappeared.

71. From North Arcot and Vizagapatam reports of small outbreaks which had died out also came, and were acknowledged with similar warnings, as likewise one from the Godavery District. It has not spread to any extent in either of these localities.

72. I was in communication with the Collectors of Bellary and Cuddapah with regard to the advisability of a tour in those parts early in August, when I received orders to proceed to Wynaad to investigate a disease among the cattle on coffee estates near Vythery. While engaged on this duty I found that disease prevailed to a great extent among the cattle belonging to the villagers in the neighbourhood of these estates, and my report thereon has already been submitted for the information of the Board.

73. The very unmanageable character of the cattle of this Taluk, their small value in comparison with that of the medicine necessary for their treatment, and the extreme unwillingness of the natives to be guided by my advice, rendered a prolonged stay there unadvisable, and I once more returned to Madras on 30th August.

74. During the month of September I received reports from the Nellore and South

Arcot Districts, but in both instances the disease had ceased before the information reached me. Disease was still reported from the Bellary District, but everywhere it was said segregation was put in practice and medicine sent. In consequence of its apparent increase towards the end of the month I thought it best to make a journey in that direction, and left Madras on the 12th October.

75. Visiting the Bellary, Hurpanhally, Havinhadagally, and Kudligi Taluks, I once more found the disease fast dying out. Nowhere could I find more than one or two sick animals. Leaving medicine and explaining in every case the necessity of preventive measures, I visited each village in which I could hear of disease. In two instances I found attempts at segregation, but the good likely to result was nullified through the obstinacy of one or two individuals, who refused to turn out their cattle.

76. Reports of disease from other parts of the district, but where it also appeared to be on the decrease also reached me, but fully persuaded of the inutility of going there without the Collector or one of his Assistants, who were just then otherwise pressingly occupied, I again returned to Madras on the 5th November.

77. During this month Rinderpest made its appearance in South Arcot, and medicine was supplied, but on inquiry I found a visit was useless, the disease having ceased by the time the report reached me.

78. From Trichinopoly and Godavery, further reports of diarrhœa were replied to with warnings that the disease was the Rinderpest, and that measures to prevent its spread were necessary. I was unable to go to so great a distance from Madras, on account of my services having been placed at the disposal of His Excellency the Commander-in-Chief for duty at the Presidency during the visit of His Royal Highness the Prince of Wales, and no other call for my services having been received in the meantime, I assumed charge of the horses of the Detachment of the 16th Lancers and 18th Hussars, on 1st December, and on the 23rd December, in accordance with orders of Government of India, reported myself to the Officer Commanding His Grace the Governor's Body Guard for Military duty with that corps.

79. Anthrax:—Under the headings Hæmaturia, Splenic Apoplexy, Inflammatory Fever, and Malignant Sore-throat, are described in the Manual of Cattle Diseases, so many different maladies, in their nature essentially the same, but exhibiting themselves externally under so many various forms depending on local causes.

80. They belong to a type of disease or blood-poisoning called anthrax, consisting in a special alteration of the elements of the blood, a vitiation rendering it unfit for the performance of its particular functions, *viz.*, the nutrition of the tissues, and the maintenance of the life of the animal.

81. This change is said to be invariably characterized by the presence in the blood of numerous minute organisms called Bacteria, but whether these are the cause or only a consequence of the specific alteration is at present a disputed question among pathologists. It would, however, appear that their presence in the blood may be considered a proof that it is capable by innoculation of producing similar disease in other animals, or even in man. It is on this account dangerous for human beings to handle or to eat the flesh of animals dying from this class of disease, and I have already brought to the notice of the Board an instance were several men, two of whom died, were in the South Arcot District attacked with disease in consequence of their having flayed or otherwise handled the carcasses of sheep which had died from a malady, the local name of which is "Terriyan," but which is easily recognized as belonging to the anthracoid class of diseases.

82. The chief causes which bring about these diseases are said to be increased barometrical pressure, fogs, and excessive humidity followed by excessive heat. It is frequent in countries exposed to inundations, or where water stagnates in the soil or on its surface, more particularly where animals are exposed to the miasmatic emanations and effluvia generated in such localities during the heat of the day, or are fed on the rank herbage which usually grows there so plentifully.

83. In almost all parts of this Presidency, these causes may be found in full operation, and with the habitual use for cattle of half-dried tanks, the water of which is loaded with decomposing organic matters, animal as well as vegetable, for drinking purposes, may fairly be considered a fruitful source of disease.

84. The constant presence in villages, in the close vicinity of the cattle sheds, of vast accumulations of filth and rotting manure, the stench from which is only too palpable to the olfactory nerves of any less accustomed to live there than the natives themselves must also be another cause of blood-poisoning.

85. The filthy practice, repeatedly seen by me, of permitting the cattle (I may fairly say of encouraging them) to feed on human excrement, cannot fail to be prejudicial in the same manner. It certainly has much to do with the extraordinary prevalence of entozoa in these animals, and no one who has not had similar opportunities to those I have lately had for making *post-mortem* examinations of cattle could believe the fearful extent to which hosts

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creatures (in particular the hydatid forms of tape-worms) infest the domestic animals in this country. This is an important matter in connection with the meat-supply, and the prevalence of entozoa in man, and requires much further investigation.

86. Many outbreaks of a disease called "Adippan" or swelled throat have been reported to me, and these I easily recognized from the symptoms described as a form of Anthrax. Unfortunately the disease runs its course so rapidly, that it has almost invariably, simultaneously with the first intimation given of its appearance, also been reported that the disease has ceased, and I have consequently had no chance of seeing animals thus attacked. When in Wynaad however I had an opportunity on one of the coffee estates of making a *post-mortem* on the carcass of a bullock which, with a view to eating the flesh, had been brought there from an adjacent village by the coolies, and then found full confirmation of my opinion of the nature of the disease in the appearances met with. These were precisely similar to those I had frequently seen in *post-mortems*, and horses dying of Loodiana fever, which has within the last few years been a cause of considerable mortality among horses in the military service; I saw a great deal of this disease at Secunderabad in connection with an epizootic of typhoid fever, depending, I am inclined to believe, on similar causes. The horse lines occupied for years past by the various mounted corps being altogether undrained, the soil must have become saturated with organic matter, from urine, &c., in which under certain favorable circumstances a peculiar decomposition is set up, the emanations from which are capable of originating disease, add to this the frequent too close proximity of manure heaps and possible contamination of the water-supply, and we need, I think, look no further for the cause of these outbreaks.

87. Doubts have been expressed whether this disease is contagious in the horse; I have myself seen such abundant and undoubted evidence that it can be so communicated, that I can no longer question the fact. It is so reputed on the Continent in all animals, but a doubt has been raised in England where the disease is now seldom met with in this form, and this it is, I imagine, which has caused Veterinary Surgeons in India to doubt also. It is usually considered contagious by native cattle-owners, and, although they are indubitably far behind in the treatment of disease, their powers of observation are great, and they are, as a rule, extraordinarily clever at diagnosis, and their ideas on this point are, I think, worthy of some consideration.

88. I have already alluded to what I consider another cause of predisposition to this class of disease, viz., partial starvation followed by superabundance of rank food. It will usually be found that the fattest and most robust of the herd are the first to be attacked with anthrax, and these also most easily fall victims to it.

89. In a malady of this sort, next to nothing can be hoped for from medicinal treatment. Unless given very early after the attack, medicines cannot be swallowed, and so rapidly does the disease run its course, that there is seldom time for any effect to be produced by them.

90. On the other hand, the removal of the herd from the particular local influences which bring about the peculiar change of the blood which is the cause of the disease, with entire change of diet, seldom fails to put an end to the outbreak. The adoption of segregation and fumigation is also desirable as a prophylactic measure.

91. The judicious use of salt with the animal's food has been found very valuable in Europe, and would, I am sure, prove equally so in this country as a preventive of this class of malady.

92. Immediate investigation on the spot of the probable causes of an outbreak and promptitude in carrying out the necessary preventive measures are absolutely required to cope with diseases of the anthracoid class, and here also the need of early information is apparent.

93. A competent professional man armed with the necessary power, or backed by the presence of a civil authority who could enforce obedience to his recommendations, could do much to lessen the mortality and check the ravages of such enzootics, but without such power I regret to say my experience leads me to believe he could do nothing.

94. When in the Trivellore Taluk in May making inquiry as to the existence of Rinderpest in the neighbourhood, I heard that many sheep had recently died at the village of Ecar, and had the opportunity of seeing some four or five in different stages of the malady, and also of making a *post-mortem* on the body of one which died while I was present.

95. Water was very scarce at the time, and what there was I found foul and stinking. The sheep were fed in the dried-up beds of the tanks for want of better pasture, and the symptoms and *post-mortem* appearances plainly indicated blood poisoning of the anthrax type.

I advised the separation of the sick and a change of pasture (if possible) for those not already suffering, but doubt if any attention was paid to my advice, though I have since heard that the disease has entirely disappeared.

96. In another village I found the cattle suffering from large boils due to similar causes, and these I was told frequently ended by causing the death of the animal. I should have

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wished to have seen more of this form of the disease, which, though not hitherto described as seen in this country, is a common mode of its manifestation in Europe, in particular, when affecting man, but a more serious outbreak of disease elsewhere called me away, and when again at leisure this also had disappeared.

97. I have endeavoured to tabulate the reports received by me of outbreaks of anthrax in a similar manner to those of Rinderpest, but the Returns are imperfect, because it so frequently happens that the two diseases are collectively, instead of separately, reported.

98. Epizootic Aphtha or "Foot and Mouth Disease" has apparently been less prevalent than usual during the past season, or perhaps more probably has not been considered of sufficient importance to be reported to me.

99. I have heard of it from Tanjore, Godavery, Malabar, and Kurnool. From South Canara, Vizagapatam, and Godavery some mortality is reported from this cause, but Rinderpest has also been prevalent there, and it would, I think, be found that this was the real origin of the fatal cases. In Wynaad I saw this disease, and learned that it commonly prevails there. I have also in other parts seen it among herds belonging to villages where I was assured that no cattle disease existed.

100. It is highly contagious, and, in my opinion, it is invariably by contagion that it appears in a herd, and the same measures that are advised for the repression of Rinderpest and Anthrax will be found applicable in epizootics of this particular kind.

101. It is only in very exceptional cases that the life of an animal is endangered by its being attacked with this disease, and the sick in reality require little or no treatment beyond nursing and ordinary attention to cleanliness, but, as a rule, they are shamefully neglected by their native owners, and maggots are allowed to breed in the sore, or the animals which are unable to graze from the soreness of their mouths are still driven out with the herd and left to feed themselves or starve; draught bullocks are kept at work regardless of their being lame, or in other cases irritating drugs are used, and as may be expected many fall victims to this maltreatment.

102. In Proceedings of Government of 2nd November 1875, Cattle No. 7, a report on this disease by Colonel H. N. Davies, Madras Staff Corps, is published. With reference to this, I beg respectfully to remark that although the remedy prescribed for local application is as good as can be used for the treatment of the sores, that this officer is altogether mistaken in his ideas of the nature and causes of the disease.

103. Veterinary Surgeons are agreed that it is a peculiar contagious fever, characterised like small-pox or measles by a particular form of eruption, in this instance usually confined to the feet, mouth, and udder. It does not invariably first show itself on the feet, and although "microscopic infusoria" may very possibly be found about the corona and clefts of the hoofs, they certainly cannot be the cause of the disease. He is also mistaken in imagining that in England and on the Continent "death is the only prescription." Animals imported for the meat markets are by law condemned to slaughter at the port of landing if found infected with this or other contagious malady, or to have been in contact with animals so affected, but I am unaware that slaughter had ever been adopted in India to root out the disease, nor do I think it either necessary or desirable that it should be. Of the highly contagious nature of epizootic aphtha there can be no doubt, but it is often associated or confounded with foot-rot, a local disorder of a totally different character. Where medicinal treatment is considered desirable, the simple course advised by Mr. Thacker in the Cattle Disease Manual will be found all that is necessary.

Concluding remarks.—Since my transfer to military duty I have continued to receive reports from various quarters to which I have replied when necessary, and I have included in the returns appended all which reached me prior to the 1st February.

During January I also complied with a requisition from the Collector of Trichinopoly for medicine for diarrhœa and dysentery. I also advised the immediate adoption of segregation, the disease being evidently the Rinderpest once more.

I cannot refrain from expressing my regret that during my tenure of the office of Inspector of Cattle Disease, I was able to effect so little in checking the spread of contagious diseases in the Presidency, while convinced that if I had been able to enforce obedience to my recommendations so much might have been done, and I would once more respectfully repeat my opinion that (notwithstanding what was formerly done by Mr. Thacker) natives will now be found too prejudiced and too apathetic to act on the advice of a professional man, unless he be himself armed with power or accompanied by some official who can ensure obedience to his instructions. A small staff of trained assistants is also necessary, one of whom could be left at each village or district in which disease to any extent might be found to exist. These might be selected from future students of the Sydapet Agricultural College who, after their preliminary education there, would with a few months' practical training, be able to do much more good than can be hoped for from the present system of distributing medicine and leaving it optional with the natives to adopt pre-

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ventive measures. Under the provisions of the Act already referred to, they would be able to carry on the measures inaugurated by the Inspector after he had ascertained the causes and necessary preventives, thus leaving him at liberty to proceed elsewhere when necessary, whereas without such assistants his work would be undone by the natives returning to their own do-nothing system immediately on his departure. Immediate reports, direct to the Inspector from the village on the appearance of the diseases, should also be made compulsory, the telegraph being employed wherever available.

(Signed) G. WESTERN, Vety. Surgn.,
His Grace the Governor's Body Guard.

With the foregoing letter the Inspector of Cattle Disease, Veterinary Surgeon G. Western, submits his report for ten months ending with the 31st January 1876.

2. From time to time the Board have had occasion to congratulate Mr. Thacker upon the success which has attended his treatment, but this report, although it bears ample testimony to the value of the remedies hitherto employed, shows only too clearly that, in spite of all that has been done, no permanent improvement has taken place in the treatment of their sick cattle by ryots left to themselves. Mr. Western describes the difficulties which he has met with in every case where he has prescribed, and complains that, being unable to enforce his orders, his efforts are often vain. He recommends the application, in case of outbreak of disease, of Act II of 1866 (Madras).

3. The returns contained in the statements which accompany this report show that the mortality among cattle attacked is very great. Of 1,976 cattle seized with anthracoid disease, no less than 1,467 died, and of 32,947 attacked by Rinderpest, the deaths numbered 19,285. The Board are convinced that a very large proportion of the cattle which succumbed might with proper treatment have been cured. They are equally satisfied that it is useless to hope for any improvement on the part of the ryots unless they have some one to guide them. The Board have recently addressed Government upon this subject in their Proceedings dated 21st March 1876, No. 798.

4. Regarding Mr. Western's proposal to introduce the Cattle Disease Act in infected districts, it is observed that when this course was suggested in 1869, strong opinions were expressed by certain Collectors against the application of the enactment (see G. O., dated 24th June 1869, No. 1,790), and that in this view Mr. Thacker concurred. The Board, however, are disposed to believe that the circumstances of some districts demand some more powerful sanction than the general advice and guidance of the Revenue Officers, and that the application of the provisions of the Act may be desirable in certain localities at certain times. It is not, of course, possible to lay down any general rule: the attention of Collectors being again particularly drawn to the subject, the Board would leave it to them to apply for sanction to introduce the Act whenever they may deem it necessary to do so.

5. The Board desire that Mr. Western will accept their thanks for his interesting report, which will be submitted, together with these Proceedings, for the information of Government with the suggestion that it be laid upon the Editors' Table.

(True Copies and Extract.)
(Signed) E. GIBSON,
Acting Sub-Secretary.

Order thereon, 15th June 1876, No. 805.

Ordered that the report be placed on the Editors' Table. The Government observe that further report has been called for on Board's Proceedings, dated 21st March 1876, No. 798 (*vide* G. O., 25th April 1876, No. 544). Its early submission is awaited.

2. The Board's proposal in paragraph 4 is approved.

(True Extract.)
(Signed) D. F. CARMICHAEL,
Secretary to Government.

Treasure discovered while excavating a Channel in the Kistna District.

Proceedings of the Madras Government, Revenue Department, 28th June 1876.

Read the following Proceedings of the Board of Revenue, dated 12th June 1876, No. 1,535:—

Read again Board's Proceedings, dated 5th and 28th April 1876, Nos. 930 and 1,129.

Read also the following letter from G. D. LEMAN, Esq., Collector of the Kistna District, to C. A. GALTON, Esq., Acting Secretary to the Board of Revenue, dated Masulipatam, 18th May 1876, No. 784:—

Referring to Proceedings, No. 930, dated 5th April 1876, I have the honor to submit copy of a letter* from the District Judge, and to request further instructions.

* 6th May 1876, No. 98.

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ENCLOSURE NO. 1.

From H. J. STOKES, Esq., Acting District Judge, to G. D. LEMAN, Esq., Collector of the Kistna District, dated Guntoor, 6th May 1876, No. 98.

With reference to your letter No. 660, dated 2nd May 1876, reporting under Regulation XI of 1832, that you are in possession of certain hidden treasure, and offering to forward it to this Court, I have the honor to inform you that I do not think it necessary that the property should be sent to this Court. Under the Regulation (Section 3) it is the finder who is bound to give notice and deposit the treasure. In the present case the finder has forfeited his right, and the Collector has acquired possession of the property on behalf of Government, the ultimate owners of unclaimed property. The Regulation does not appear to me to contemplate or provide for the case that has arisen.

(True Copy.)
(Signed) D. PURUSHOTTAMAYA,
Deputy Collector.

In his letter recorded in the first of the foregoing Proceedings, the Collector of the Kistna District reported the discovery of nine gold ingots of the estimated value of Rupees 53,240, which, upon a search being instituted in consequence of information received by Mr. Leman, were found buried on the premises of one G. Naraidu.

2. The Collector was directed to proceed under Regulation XI of 1832, and to report the award in due course, the Board being of opinion that it was the province of the District Judge to adjudicate in the matter. The Collector now reports that the District Judge is of opinion that there is no necessity for any award of the Court, as the finder has forfeited his right and the Collector has acquired possession of the property on behalf of Government, the ultimate owners of unclaimed property.

3. The Board consider that under Section 8 of the Regulation an order of the Court is a necessary preliminary to confiscation, but as the District Judge does not concur in this view, the Board resolve to submit the matter for the orders of Government. Mr. Leman having promised that the claim of the finders to such a share as they would have been entitled to had they given notice as required by law would be supported if they pointed out where the ingots were buried, the Board recommend that the four ingots at first produced by them be restored, the others to which they have no claim, as they denied their existence, being confiscated. The Board also recommend that some reward be granted to Mr. Carlier, through whose information the discovery was made.

4. As the District Judge does not concur in the Board's interpretation of the law, the orders of Government are requested as to the course to be pursued, should any similar case arise in future.

(True Copies and Extract.)
(Signed) C. A. GALTON,
Acting Secretary.

Order thereon, 28th June 1876, No. 863.

As recommended by the Board, the finders must receive four ingots—which constitute, in fact, the remuneration rendered by the Collector, to induce them to make any disclosure whatever.

2. Mr. Carlier should receive Rs. 1,000 for his services.

3. In future cases, Collectors must apply to the Judge for confiscation more formally than Mr. Leman has done. The Judge's reply to his letter is, however, sufficient sanction in the present instance.

(True Extract.)
(Signed) D. F. CARMICHAEL,
Secretary to Government.

MISCELLANEOUS.

LEAF DISEASE.—CEYLON.

It was with a deep sense of disappointment we read the few lines of the Report of the Planters' Association Committee regarding leaf disease, in which we are simply told that they are unable to account for the origin or cause of the pest. This was the only result of the Committee's enquiries on a subject which has been foremost in the thoughts of planters for years past. We had expected that, at any rate, a collection of data would have been brought together, which, if not conclusive as to cause an origin, might have served as a base of further observation and research.

It was the more important that some information should have been brought together on this question inasmuch as we are told that certain opinions have been pretty freely given in a quarter where they are likely to influence deliberations on railway extension far more than any imaginary partisanship of a junior Lord of the Treasury. We have endeavoured to gather data on this subject from a variety of quarters, and, although we have been but indifferently furnished with replies, we have nevertheless obtained some information, which however much at variance with all previous theories, is extremely interesting as shewing beyond a doubt that harmful as the pest may

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be during its visitation, it is not so lasting in its effects, or nearly so much to be dreaded as some would have us believe.

We are glad to have it in our power to state that this opinion is shared by Mr. MacIvor now on a visit to the interior of Ceylon after a residence in India of about a quarter of a century. This gentleman, as our readers are doubtless aware, is the Government Superintendent of Cinchona plantations in South India, and is now on a visit of an entirely unofficial character. Mr. MacIvor has had good opportunities of observing the progress of coffee planting in South India, and is naturally desirous of noting and comparing the interests of Ceylon with that of the Indian Peninsula. He has spoken most decidedly in regard to the unsuitability of much of the land about the vicinity of Nuwara Eliya for cinchona, and strongly urged a gentleman who had felled a hundred acres of forest to devote it to some other purpose. Tea, he believes, will grow at that altitude, but whether profitably or not he has not said. Mr. MacIvor regards the appearance of frost so generally about our Sanitarium as very remarkable, Ootacamund does not suffer from this in nearly the same degree, but whatever the cause, there is no question in his mind that the fact is inimical to the cultivation of certain products. Coffee is far less susceptible of severe cold than cinchona, the only question in the case of the former being the altitude at which it will bear a profitable crop, and with regard to that there is no doubt that aspect and locality must be taken into account at the same time as altitude.

To planters, however, by far the most interesting opinion given by Mr. MacIvor is that, in reference to leaf disease, unlike the Director of our Botanic Garden, he has no fear of this being more than an ordinary visitation, serious in its immediate effects on crop, but not to be dreaded in its ultimate consequences on healthy, well-cared-for coffee. He declares that he has known of its existence in South India for upwards of twenty years, and is certain it is not confined to one plant: indeed he pointed out the appearance of the fungus on some tea plants at Nuwara Eliya. In his opinion we need be under no apprehension about coffee being killed by leaf disease if estates be maintained in good condition, by generous careful treatment. Naturally enough estates on poor land or where the cultivation has been neglected, must be expected to suffer, and under such circumstances trees will probably succumb to the disease, but this is a very different result to what has been apprehended in some quarters. Such being the case we are glad to learn that in a few days Mr. MacIvor will meet Sir William Gregory in Nuwara Eliya for the purpose of accompanying His Excellency to Hakgalla, on an inspection of the cinchona gardens and other objects; we have little doubt but that an opportunity will present itself for submitting his opinion of leaf disease to the Governor. In this way we may hope that the alarm previously established in His Excellency's mind and which has probably had its influence on the prosecution of the railway enterprize, may be, if not removed, at any rate considerably modified.

That the feeling in regard to this pest has been much exaggerated, was made clear to our minds some time ago when collecting data bearing on the subject. First amongst those is the fact that estates subject to leaf disease have since borne very abundantly. There is the case in point of the Galoola estate in Madoolsema, once suffering badly from it, and as we believe, the first estate in that district attacked by the pest; yet a few months ago it was loaded so heavily with crop, that the manager, fearful of the consequence of over-bearing, pruned away two or three hundred weights an acre of young berries. We may mention another case, one perhaps more striking inasmuch as the estate in question has never had manure applied to it. A year or two ago leaf disease made its appearance badly on one of two estates which stood by themselves in a corner of the Happotella district: the trees lost all their leaves from the disease, and gave scarcely any crop that season; but, in the following year the estate produced one of the heaviest crops it has ever given. Equally strange to say, the disease did not shew itself on the adjacent property. We have heard of other similarly remarkable cases, but these will suffice to shew that the results of leaf disease are not necessarily so much to be feared as is supposed by some alarmists; we regret very much that the Planters' Association did not collect and give to its members all the data possible, bearing on the subject, as there must be a great deal of valuable information lying scattered about the country, which would be of interest, if not of use, when brought together. We can at any rate congratulate those interested in coffee upon the opinion formed by such a practical man as Mr. MacIvor in regard to leaf disease.—*Ceylon Observer.*

THE ORIGIN OF LEAF DISEASE.

(*Communicated.*)

Though not a coffee Planter, I venture to offer the following suggestions :—

Leaf disease in coffee (*Hemilia vastatrix, et hoc genus omne*) appears to be accompanied by, to be the result of, or to be largely disseminated by various species of fungus. Compare the *Oidium tuckeri*, or vine disease, the *Uredo segetum*, or smut in wheat, and the *Botrytis*, or potato disease. Whether the fungus be cause

or effect, we know that it is always present in these diseases, and that "its growth and multiplication have a large share in the increase and extension of the disorder" (Carpenter), while its reproduction causes the possibility of an indefinite extension of morbid growths. Hence whatever destroys the fungus, destroys, if not the disease or its cause, at least its capability of extension, and may even, by the destruction of the fermentative germ (to borrow an idea from yeast) restore to the diseased plant a chance of health. Sulphur fumigation, as practised in the vine disease, has lately been recommended. But recent experiments suggest a remedy equally cheap, more easily applied, and apparently more certain. Borax (Tamil, *venkaram*) in solution at once kills the spores of fungus: *Oidium tuckeri* (vine fungus) dies instantly under its action: minute animal life, *e. g.*, that of Rotifera equally perishes. And just as the researches of Pasteur, and others, have shown that fermentible and putrefiable substances may be kept sweet by preventing the access of (fungoid) germs, so their access is no longer harmful if the substances have been protected by borax. The application then of a weak solution of borax to affected plants might be worth trying: a common garden syringe would very thoroughly wash every leaf with but little trouble. The solution should be weak, as even the cell life in the living plant may be paralyzed by this salt: the fungoid growth however would be much more easily affected than the plant itself.

A few words as to cause and effect. It is claimed that the perserving use of sulphur fumigation in the vine-disease has destroyed the fungus, and restored the plague-stricken vineyards to health; that the destruction of the fungus has given recovery and life to the vine. It is also asserted that certain animal diseases, such as thrush, diphtheria, &c., have been, and are communicated by the introduction of (fungoid) germs into healthy subjects. These facts, seem to point to the fungus as the active cause, or at least the essential condition, of these diseases; anything therefore that checks or destroys the fungus *pro tanto* checks or destroys the disease. Hence the necessity for the eradication of the fungus, in which borax would seem to be a most valuable aid. But, even if the fungus is not the actual and essential cause of disease, but merely an invariable associate, its destruction is almost equally important. Even though its presence be secondary to a morbid condition, its action is excitative; just as "the growth of the yeast plant excites and accelerates fermentation, while its reproduction enables the action to be indefinitely extended," so it is probable that the growth of the coffee plant fungi excites and accelerates leaf disease, while their reproduction facilitates the spread of the plague. Probably two conditions are necessary to the disease; a morbid state in the plant, that is a subjective condition; and appropriated spores of fungi, that is an objective condition. While, therefore, the destruction of the fungi is an absolute necessity, so also is the proper cultivation of the plant. Plants grown from faulty seed, or from weak self-sown seedlings, are no doubt predisposed to disease, to the reception and development of the spores of poisonous fungus which float in countless millions through the air. So also are plants that have been "forced" or otherwise unnaturally cultivated.

Bearing in mind that fungoid growths accompany, cause, or propagate these diseases, and also that fungi are polymorphic, that is developed variously from similar germs, apparently according to the nidus in which they are developed, it would be well for planters systematically to wage war against all such growths, and against all conditions that would favour such growths. Heaps of decaying leaves, bark, &c., largely develope parasitic fungi and send abroad their spores, which when they find an appropriate nidus in a "chick" on weakly predisposed plants *may* develope into the characteristic coffee fungus. This is but theory, but that it is not impossible is shown by the fact that the yeast plant (*Torula cerevisiæ*) may be developed by showing in an appropriated liquid the sporules of any of the ordinary "moulds" (*penicillium*, &c.) So again, yeast cells introduced into a putrescible animal fluid cause the development of vibriones, while, *vice versâ*, the showing of vibriones in a fermentible fluid gives rise to yeast cells. It is possible therefore that an unsuspected source, *e. g.*, the manure heaps of decaying leaves, or rotting trees, may be the "*fons et origo mali*" on some afflicted estate. And, it is also possible that a fungus, originally harmless, may become poisonous by development in a morbid nidus, and acquire virulence by transmission; *vires acquirit eundo morbificus* is a not unknown fact in disease.

Seeing that fungi, bacteria, &c., are thus destructible by borax, even a layman will naturally ask whether the salt can be used, as would seem to be indicated, in dressings for wounds, in cleansing hospital walls and floors, and in other sanitary measures. Borax is well-known empirically as a remedy in inflammatory sores and eruptions, such as the sore breasts of a nursing mother, thrush, prickly heat, nettle rash, &c. But hitherto it has not appeared in the list of antiseptics and disinfectants. Yet, if it is so destructive of fungoid and germ growth, of fermentative and putrefiant action, may not its properties deserve a closer study of pathologists, and may it not have a wide field of usefulness before it? What might be its effect in typhoid fever which Dr. Klein now declares to be caused or invariably accompanied by a poisonous fungus which in certain (morbid?) conditions of the gastric organs [illegible]

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their membranes; or what its effect on the microzymes of the small-pox, cattle disease, and other vesicles, or on pus corpuscles, and morbid bioplasm; but I fear that as a layman I am advancing "*ultra crepidam*," and must withdraw.—N.—*Madras Mail.*

PUBLIC WORKS.

Steam-boat Canals.

I was employed almost all the time I was in India, on works of irrigation connected with water transit, and all this time my estimation of the latter has been continually increasing; and my opinion is, that it is at this moment by far the first point in the material improvement of India. In the present state of matters, incomparably more can be effected by the expenditure of money on water communication, than in any other way, even that of irrigation:—*First*, because a system of cheap transit is absolutely essential to the development of India, and that almost the whole country is paralyzed from want of it, and, *Secondly*, because so much has already been done towards the accomplishment of this object, in the vast irrigation works now in progress, that a trifling sum of money expended in connecting and extending those works will produce so greatly disproportionate an effect. This matter of cheap transit is now being so seriously pressed upon other Governments, that decided steps are being taken to provide it in countries where untold millions have been spent upon railways; simply because it is at length realized that railways cannot carry *cheaply*.

Strange it seems, that it should have taken forty-five years, and an expenditure of thousands of millions, before men could find out whether really cheap transit could be obtained by that means or not. The United States are now planning a complete system of internal steam-boat canals. France is extending and improving her whole system of canal and river communication. Germany is projecting such a system from the Baltic to the Black Sea; Russia, from the Baltic to the White Sea.

One fact, to put this matter in a strong light: the present traffic between the Western States of America and the ocean is 10 million tons. Now whether this is carried 1,200 miles by land at one penny per ton a mile—if the railways there can carry at so low a rate—or by steam-boat canal at one tenth of a penny, makes a difference of £45,000,000 sterling per annum; or more than the whole taxation of the States before the War. And this is on one line of communication only. But this is a small part only of the matter; it is not a question of comparative cost, but whether there shall be this traffic at all. If the Western States were dependent upon land carriage, and had not three lines of water communication, though imperfect, not one-twentieth of this traffic would exist at all, and the States would be utterly pauperized. Where the markets of the world not opened to their produce by internal water carriage, the condition of the interior States would be that of death compared with their present state of life. And this state of death is now the actual state of India.

To give an instance of this, the price of wheat in the North-West is 3*s.* 6*d.* a bushel, or £7 a ton; and the freight and expenses from Calcutta to London are about 1*s.* 6*d.*, together 5*s.* The average price in London is 6*s.* 6*d.* Now if the cost of carriage inland is 1*d.* a ton per mile, it amounts on 1,000 miles to 2*s.* a bushel, making the cost of the wheat in London 7*s.*, so that it cannot be imported till the price in England is much about the average. But if it could be carried at one twentieth of a penny per mile, or 2½*d.* a bushel, for 1,000 miles there would be a profit of 1*s.* 3*d.* a bushel, or 50*s.* per ton, sufficient to produce an almost unlimited traffic even at the average price of wheat in England; and when wheat is at 8*s.* here, the profit would be 2*s.* 9*d.* a bushel or £5 a ton. This would raise its value in the North-West from £7 to £12, which means increasing the *profit* on cultivation from £2 to £7 or 3½ fold. Wheat is the staple produce of the North-West, and whether an entirely new life shall be put into the whole of that immense tract, depends upon our giving them steam-boat canals. The sole reason why the Western States of America are in a state of the highest prosperity, and the N.-W. Provinces are in a state of utter poverty, is that the former has effective water-carriage and the other none. And so with all the other products of India, both with respect to foreign and internal markets.

The Sirhind, Main Ganges, Lower Ganges, and Soane Canals, now under execution and well advanced, will leave only about 100 miles of canals to complete the line for 900 miles, to within 300 miles of Calcutta, and the projected and estimated Rajmahal Canal would perfect the line. And so with other main lines. A few hundred miles of canal would give us continuous cheap transit for several thousand miles. Certainly no expenditure compared with this would give one-twentieth part the results that this would, revolutionizing districts containing some 100 or 150 millions of people. And so with India generally. Steam-boat canals could be carried through all the populous parts of the country, to carry at one-twentieth of a penny per ton per mile for long distances, at an average cost of £3,000, requiring only a million tons a year, to pay 7 per cent.

The railways *cannot* carry at a charge which will allow the traffic of the country to be developed for more than a short distance. On the Godavery Canals, we are now carrying for

short distances at $\frac{1}{8}d.$ a ton a mile, and on the Main Line about 200,000 tons a year are carried from one little isolated patch of country alone. The traffic on these would be increased ten-fold. A complete system of steam-boat canals, opening all the main lines of India, might be completed in three or four years for 20 or 30 millions, giving 10,000 miles of canal, besides making every thousand miles of river ten times more valuable for transit than at present, from their being thus connected with all other parts of India. It must be remembered that all the great lines of India are perfectly practicable for such canals, and also that they may be worked at any speed. This is what I insist upon, as the first point in respect of material improvement.

The *second* point on which I insist, is the actual results of canal opening in Tanjore, Godavery, and Kistna, all at this moment so immensely ahead of all other districts in revenue, wealth, traffic, and exports. The revenue of Tanjore is now £750,000 and of Kistna and Godavery each £550,000; while the whole revenue of India, exclusive of opium, is about 42 millions, or about £250,000 per district. The progress of the Godavery and Kistna districts since the commencement of the new works in 1846 is shown as follows:—

	£
Revenue before 1846	470,000
Revenue of 1874-75	1,100,000
	£630,000

Or an increase of 230 per cent.

Now the actual expenditure up to 1874 was about one million sterling, so that the total increase of revenue was 63 per cent upon the cost of the works. The revenue of the adjoining districts increased during the same period as follows:—

	£
Revenue of Vizagapatam, Bellary, Kurnool, Cuddapah, and Vellore before 1846.	1,060,000
Ditto in 1874-75	1,410,000
	£350,000

Or an increase of 34 per cent. But most of this increase was due to improved irrigation in those districts. The actual extent of land irrigated is now about 900,000 acres, costing a little more than £1 per acre.

The *third* point I urge is, that in respect of public works the first question is not—What do they return directly to the treasury, but what is their total return direct and indirect? The Government is not a Company, whose sole business it is to obtain a direct return to the treasury in money. Thus in Godavery the cost has been £1 per acre, including both irrigation and navigation, while the increased value of produce is £2 per acre at a very low valuation, besides the incalculable effects of cheap transit both for passengers and goods.

Now this ought to be the first point shown in every report on Government public works. The direct returns to the treasury should be carefully kept subordinate to this, and that at a great distance too. Further proof of the progress of Godavery is shown in the increase of exports to £800,000, and of imports from £20,000 to £200,000. Surely this is a question deserving the most thorough investigation. What has produced such results in this district? The works are still in progress; 700,000 acres are now watered, and when the remaining 300,000 are so, the additional water-rate alone will be £120,000, and the whole certainly much above £700,000, second only to Tanjore, the other great irrigated district, which has been raised from one of the lowest districts in India in point of revenue to be the second. Is it not extraordinary then that in the innumerable official papers written on finance, not one of them takes the least notice of this, the greatest fact in the whole inquiry:—That three districts out of about a hundred and sixty, are now yielding a million a year more than they did before they were thus improved. Were all the others but improved in the same way, 50 millions would be added to the revenue.

The last point I notice is the importance of storing water. This has now at length been recognized in the formation of two large reservoirs near Bombay, each capable of containing about 140 million cubic yards at one time, and of supplying about 200 millions per annum, including what is discharged and used during the monsoon. The effects of stored water are three-fold: *First*, if stored near the sources of the river and allowed to flow down them in the dry season, it will either render them navigable, or greatly augment the navigation. *Second*, it will provide water for irrigation throughout the year partly in the neighbourhood of the tanks, and partly in the deltas, keeping the delta canals full, both for irrigation and navigation during the dry season. *Thirdly*, every tank will aid in diminishing the effects of flood in the monsoon, which especially in the highly-improved deltas, where an enormous amount of life and property are at stake, are a matter of the highest importance. Any one of these results will abundantly repay the cost of storing. How much more the three together obtained from the same tank.

To recapitulate the points I so earnestly insist upon. *First*, the absolute necessity of a system of steam-boat canals to provide really cheap transit at 1*s.* 10*d.* to one-twentieth pence per ton per mile, and the certainty that money so expended will produce effects incomparably greater than in any other way. Such a system would revolutionize the whole material condition of India, and the state of the finances.

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Second, the wonderful progress of the three irrigated districts of the Tanjore, Godavery, and Kistna, yielding now together a million a year in revenue more than they did, is incomparably the greatest fact connected with the question of finance in India.

Third, the importance of storing water generally, as they are beginning to do in Bombay for the three purposes:

(*a*) of improving the river navigation in the dry season:

(*b*) of keeping the canals in the deltas full for navigation and irrigation in the dry season:

(*c*) diminishing the floods along the lines of the rivers, and especially in the highly populous and improved deltas, where so great an amount of life and property are at stake.

A. COTTON.

—*The Indian Agriculturist*, Vol. I, p. 160.

THE DEBATE ON LADY DOCTORS.

THE House of Common last night grew eloquent on the vexed question of the desirability of women practising as surgeons and physicians, and a debate of considerable interest took place. Mr. Cowper-Temple moved the second reading of the Medical Act Amendment (Foreign Universities) Bill, by which it was proposed that women holding medical diplomas from the Universities of Paris, Berlin, Vienna, Zurich, and Berne should be entitled to registration in England, and thus placed on an equality with regular surgeons. It is well known that many ladies who hold diplomas from these Universities are now practising in London and other towns, but they have no status in the profession, as they are rigidly excluded by the Medical Council from the advantages of legal registration. This, of course, has a damaging effect upon them in very many instances, although according to Lord Eslington, a lady practitioner in the Metro police is at the present time receiving higher fees than any medical man in the kingdom. If this be so, it is evident that the old prejudice against "women doctors" is gradually dying out, and that they are slowly making a position for themselves, although the Medical Act ignores their existence in the profession. In some special diseases, perhaps, of their own sex ladies will be largely consulted, as many delicately nurtured women, with a too nice sense of modesty, shrink from the consultation room of an ordinary medical man. But it would be absurd to suppose that in the operations requiring physical nerve and expertness in the manipulation of instruments women will be as successful as men. This view is evidently held by Mr. Wheelhouse, who last night asserted that if a woman proposed to give him a dose of camomile tea or salts and senna, he should have no serious objections; but when she proposed to cut his leg off he would just as soon that she cut his head off. There are many operations more difficult than a simple amputation, and we question if any of the advocates of women's rights in the medical profession would have sufficient moral courage to submit to being operated upon by a lady. The theory that women are qualified to act as surgeons is a very pretty one in itself: but when the practical application of the idea is directed to one's own person, it is a very different affair indeed. Apart from the general question of female doctors, the point involved last night was the acceptance of foreign diplomas in England as guarantees of proficiency and merit in the profession. Here it was argued a dangerous precedent would be established if Mr. Cowper-Temple's Bill became law, as a loophole would be opened through which persons not duly qualified might creep into the ranks of our medical men. If once women holding diplomas from foreign Universities were admitted into the profession, it would be impossible to deny the same privilege to men, and it was this danger that caused Lord Sandon, on behalf of the Government, to oppose the Bill. He warmly defended the cause of female practitioners, but argued that it was utterly impossible to legislate afresh with regard to foreign qualifications for women alone. The noble lord however announced that after mature deliberation, the Government had resolved to give their support to the measure introduced by Mr. Russel Gurney. Under this Bill none of the Universities will be obliged at admit women unless they like; and it further provides that if women are admitted to the register they shall not be necessarily qualified to take their seats upon the Boards of the Universities and Corporations. There will be no compulsion exerted upon the gentlemen now in charge of the various medical schools and hospitals throughout the country, as the principle of the Bill is entirely permissive. After the announcement made by Lord Sandon there was a general feeling in the House that Mr. Cowper-Temple's Bill might be withdrawn with a good grace, but the noble lord gave no hope of Mr. Russel Gurney's measure being passed this session. This brought Mr. John Bright forward with an eloquent appeal to the Government to allow the Bill of the Recorder of London to be pushed forward without delay. He expressed himself confident that there were many meritorious women who were approaching the time practising, and a great many also in the country who were suffering from diseases who will be very glad to have the assistance of medical advisers of their own sex. "Therefore," he continued, "for the meritorious women who are studying, and for the sake of women who are suffering, I think that the

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House, if it has once made up its mind to the principle of this legislation, could not do a wiser thing than do what it has to do at once." No reply was vouchsafed to this appeal, but Mr. Cowper-Temple was satisfied with Lord Sandon's promise of the countenance of the Government to Mr. Russel Gurney's Bill, and withdrew the motion for the second reading of his own measure. With the press of work upon the Government it is to be feared that no action can be taken during the five weeks which remain of the present session, and therefore the "women doctors" will have again to wait the turn of the wheel which is to bring them the much-coveted privilege of a legal status in the medical profession.—*Manchester Evening News.*

WHY ARE WE RIGHT-HANDED.

There is, in Sir Charles Bell's Bridgewater treatise a quaintly worded passage, in which the author endeavours to deal with the reason why we normally use the right hand in preference to the left. After a surfeit of Haekel and Darwin; after, as must be the case when one attempts to keep on rapport with modern scientific thought, becoming fairly imbued with the notion that distinct creative acts never took place, and that the fire mist and the primal germ are our legitimate ancestors of unbroken line, there is something positively refreshing to turn back to earlier writings, and there to find a material theory contemptuously dismissed in order that the author may anchor his faith to the idea that man was created right-handed by Divine intention. He says that "the preference of the right hand is not the effect of habit, but is a natural provision, and is bestowed for a very obvious purpose;" but what that purpose is he fails to make clear, except inferentially, in the statement that "there ought to be no hesitation which hand is to be used or which foot is to be put forward; nor is there, in fact, any such indecision." Any one who has ever witnessed the amusing spectacle of a squad of raw recruits learning the goose step will be disposed to combat this last assertion. It requires longer teaching than would be imagined to impress upon the embryo soldier that the left foot is first to be moved. Experience goes clearly to show, besides, that the average individual steps off indiscriminately with either foot; and hence the selection of the left foot, merely to secure uniformity in the military files has been made, though the very fact again is curiously at variance with the above author's intimation, that a heaven-implanted instinct teaches us to put the right foot forward.

We have mentioned Bell's treatise, not, however, for the sake of the theory which he maintains, but for the one which he rejects in a few brief lines. "It is affirmed," he says, "that the trunk of the artery going to the right arm passes off from the heart so as to admit the blood directly and more forcibly into the small vessels of the arm. This is assigning a cause which is unequal to the effect," he adds; and probably supposing that no other causes would ever be combined therewith to bring it up to equality, he curtly pronounces it a "participation in the common error of seeking in the mechanism the cause of phenomena which have a deeper source," said source being supernatural. For the man who discovered the functions of motion and sensation pertaining to the brain and spinal marrow, who located the sensory nerves, and those which formed the wonderful telegraph commanded by the will, and who showed that the nerves of the different senses are connected with distinct portions of the brain, so implicit a belief in the active interference of an Unknown Power with human mechanics is indeed strange. It is to this faith, however, that must be ascribed this neglect to prosecute the investigations which, very recently carried through by a French physician, Dr. Fleury, of Bordeaux, have adduced facts showing that our natural impulse to use the members on the right side of the body is clearly traceable to probably physiological causes.

Dr. Fleury, after examining an immense number of human encephala, asserts that the left anterior lobe is a little larger than the right one. Again, he shows that, by examining a large number of people, there is an equal supply of blood to the two sides of the body. The brachio-cephalic trunk, which only exists on the right of the arch of the aorta, produces, by a difference in termination, an inequality in the waves of red blood which travel from right to left. Moreover, the diameters of the subclavian arteries on each side are different, that on the right being noticeably larger.

The left lobe of the brain, therefore, being more richly hematosed than the right, becomes stronger; and as, by the intersection of the nervous fibre, it commands the right side of the body, it is obvious that that side will be more readily controlled. This furnishes one reason for the natural preference for the right hand, and another is found in the increased supply of blood from the subclavian artery. The augmentation of blood we have already seen suggested above; but the reason for it is here ascribed to the relative size of the artery and not to any directness of path from the heart. Dr. Fleury has carried his investigations through the whole series of mammifers; and he finds that the right-handed peculiarity exists in all that have arteries arranged similar to those of man. At the same time such animals, notably the chimpansee, the seals, and the beavers, are the most adroit and intelligent.—*Scientific American.*

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